Class AE5

Book U47

Copyright No.

COPYRIGHT DEPOSIT.

OCT 21 1911

SAMBUR

THE UNITED EDITORS PERPETUAL ENCYCLOPEDIA

A LIBRARY OF UNIVERSAL KNOWLEDGE

COMBINED WITH AN

UNABRIDGED DICTIONARY

OF THE

ENGLISH LANGUAGE

MANAGING EDITOR

GEORGE EDWIN RINES

ASSISTED BY MORE THAN FIVE HUNDRED OF THE MOST EMINENT SCHOLARS AND SPECIALISTS

THIRTY VOLUMES

ILLUSTRATED

UNITED EDITORS ASSOCIATION

NEW YORK—CHICAGO

MDCCCCXI

AE5
U47

Copyright, 1909

by

The United Editors Association

Copyright, 1911

by

The United Editors Association

© Cl. A 297620
No. 1.

SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′thėr.*
ä	care, fair	*cär, fär.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr. stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth.*
ö	Goethe (similar to *e* in her)	*gö′tėh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
ú	full, push, good	*fúl, púsh, gúd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chär, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dėl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
th	though, breathe	*thō, brēth.*
z	zeal, maze, muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′ėr, vĭzh′ŭn.*

REFORMA'TION, The: great spiritual and ecclesiastical movement in Europe in the 16th c. (beginning about 1517), whose result was the separation from the Church of Rome of the national churches of Britain, Denmark, Sweden, Norway, and Holland, and of many parts of Germany and Switzerland. In other countries, e.g., Hungary and France, the same movement detached large portions of the population from the Roman Catholic faith, yet without leading to a national disruption with the papacy.

The causes of this movement were manifold; and, as may be supposed, they present themselves in very different lights to members of the two different communions

To Protestants the Reformation appears as the natural result of causes long at work. The Church of Rome had gradually from the 6th c., or the time of Gregory the Great, extended not only its influence but its direct control over all the countries of western Europe, in many places, e.g., Ireland, Scotland, and part of England, displacing the older churches with their simpler form of government. Under Boniface VIII., in 1302, the supreme power of the pontificate culminated. In the meantime, (a) the instinct of national life was developing in the modern European peoples. That instinct conflicted with a supreme power outside the nation. The voting at the Council of Constance, not by individuals, but by nations, English, German, Italian, French, was an expression of the national instinct, fraught with danger to the pontificate. Then came (b) the revival of learning and the consequent awakening of the human intellect. It was in Italy (and the nations looked to Italy then as a leader in all good things) a pagan revival. An eclogue on the Passion of our Lord spoke of Him as Daphnis. 'Daphnis in an odoriferous garden' is the commencement of the agony in Gethsemane. But when men begin to think they will in time think to some purpose. Cardinal Pole said that men 'ought to content themselves with their own inward convictions, and not to concern themselves to know if errors and abuses existed in the church.' But that is as impossible in the 15th as in the 20th c. The literary movement spread to Germany, England and other places: Reuchlin arose in Germany: Erasmus in Holland, whence he went to England and was engaged in preparing his Greek testament. Then (c) there was an awakening of spiritual life and a sense of individual relations to God. The Church of Rome had an exaggerated sense of the value of forms and ceremonies and of their perfunctory discharge by the faithful. It put faith in the keeping of the Holy Roman Father. The individual came to God through the church; and for the individual believer the church was the priest. But there was a growing sense that the individual is responsible for his faith, and that he can come without the aid of a human intercessor to the Father in Heaven.

If we note the character of many of the popes, e.g., Alexander VI.; if we consider various abuses in the church, notably the sale of indulgences, and the character of many of the priests, their ignorance, the perversion of ecclesiastical offices, we see that some kind of moral upheaval must come. The satires of Erasmus and Buchanan illustrate the moral and intellectual character of the priests. Many of the dignitaries of the church neglected their spiritual duties and gave themselves up to worldly pleasures or at best to political and military activity.

There were reformers before the Reformation. Wiclyffe in England; Huss and Jerome of Prague had denounced the abuses of the church: had awakened interest, and even to some extent secured royal favor. But the overbearing power of the church proved too strong for the reforming spirit. Huss, summoned to the Council of Constance in 1414 with promise of safe conduct, was confronted with articles of abjuration, which he refused to sign. Then he was burned at the stake, in defiance of the promise of safety. The rising spirit of reformation was quenched in the flames which consumed his body. Other less notable men, the Brethren of the Common Lot had spiritual life. Gerhard Groot and Thomas à Kempis and, springing from them various men, especially John Wessel of Gröningen, all these and many others, were harbingers of the Reformation.

On Oct. 31, 1517, Luther's conflict with the Church of Rome began, when he attacked the doctrine of Indulgences. This date has been celebrated by Protestant Germany as the festival of the Reformation. The doctrine of Indulgences is singularly liable to abuse by a church needing money. The abuses were at their height, and attracted the attention of Luther, when the notorious Tetzel, a Dominican monk, began to sell them near Wittenberg (see INDULGENCE). Luther was aroused to indignation by the brazen effrontery of this man and by the evil results of the system among the members of his own flock. He attacked not the Church of Rome, but this abuse. Gradually he turned to different aspects of the papal system, and his resolution to assail it was formed. Eck, with blundering polemics and Cajetan with bland sophistries, approached him in vain. A papal bull was fulminated against him, which, 1520, Dec. 18, he burned at the gates of Wittenberg.

At about the same time there was a similar movement, without any concerted agreement, against indulgences in Switzerland. Zwingli, the preacher in Zürich, opposed the Franciscan friars in their sale of indulgences. His opinions were declared heretical by the universities of Cologne and Louvain; but the magistrates and the city supported him and the reforming spirit spread to neighboring cantons. In the meantime Luther advanced in his work. He called upon the Christian nobles to rise against Rome. He pronounced against the seven sacraments, in

favor of three only, Baptism, the Lord's Supper, and Penance. He declared for the use of the cup by the laity. His writings were read throughout the empire, as far as Spain, and Germany was aflame with the new spirit.

The interposition of Charles V., crowned emperor of Germany in 1521, Jan., interrupted the progress. He summoned a diet of the princes and states of the empire at Worms, and issued, at the instigation of the papacy, an edict that Luther's writings should be destroyed. The Estates refused to publish it unless he was allowed, under a safe-conduct, to appear before them and answer the charges. Luther was accordingly summoned to the diet. His journey thitherward and his entrance into Worms, Apr. 16, was triumphal. Thousands streamed to see him: gentlemen of the court escorted him to his lodgings: crowds of distinguished men flocked daily to see him. The next day he appeared before the Imperial Diet and two questions were put to him: first, whether he would acknowledge his books, pointing to them; and secondly, whether he would retract their contents or persist in them. Among the treatises there were some devotional writings, like the 'Lord's Prayer,' which had never been made the subject of complaint. Luther was not prepared for this proceeding, and answered in a low voice, possibly overawed at first sight of the assembly, that he would like further time in so important a matter. Time was given him. He appeared the next day and, in a long and thoughtful speech, divided his work into three classes: those upon which he and his opponents were agreed, those in which he had attacked corrupt laws and doctrines of the Papacy; these he could not retract. But there were others of his writings against persons who defended unlawful practices and teachings. In these he may have been too violent. He would retract anything upon being convinced of its error. He quoted the words of Jesus: 'If I have spoken evil, bear witness of the evil; but if well, why smitest thou me.' Upon being convinced from the Bible that his writings were erroneous, he would be the first to burn his books. Luther spoke in Latin, and then by request in German. The princes held a short conference and then at direction of the Emperor reproved him for having spoken impertinently, refused his demand for evidence from the scriptures, declaring that his errors had been condemned by the church, notably by the Council of Constance, and such judgments must be accepted. They promised, however, if he would retract the offensive articles, to deal fairly with his other writings, and pressed the demand for recantation. A few words were interchanged and then Luther uttered the memorable words: 'I neither can nor dare retract anything, unless convinced by reason and scripture; my conscience is a captive of God's Word, and it is neither safe nor right to go against conscience. There I take my stand. I can do no otherwise. God help me. Amen.'

Luther remained a few days at Worms. On the morning of the 19th the Emperor sent word to the Estates that he would send Luther back in safety to Wittenberg, but would treat him as a heretic. The majority, however, insisted on further negotiations, which were conducted by the Elector of Treves. The friendliness of the negotiations, the manifest interest in Luther and his cause, were adapted to move him. He was urged especially to retract the writings in which he had rejected the decisions of the Council of Constance. He was asked to submit to a verdict of the Emperor and assured that his books should be examined by a committee above suspicion. Luther insisted that the judgment should not be contrary to God's Word. Upon that he would judge for himself. No reconciliation was possible between the principles of the Church of Rome and those of Luther. Apr. 25 he received his safe-conduct and was on his way home, forbidden to preach and put under the ban of the empire. As he left Eisenach and was passing through a narrow defile near the fortress of Altenstein, he was seized by two armed horsemen with attendants, carried to the neighboring castle of the Wartburg, and there lodged in safety. This apparently violent seizure was the friendly act of his sovereign, Frederick of Saxony, to protect him from the destruction that his intrepid conduct was certain to have called down upon him had he remained at liberty. The ban of the empire had followed him, and temporary obscurity was his only safety.

The Reformation suffered, however, from the absence of his guiding hand. Carlstadt and others, left alone at Wittenberg, gave the rein to many excesses. Reform seemed likely to merge into license. The heart of Luther, after a year's residence in obscurity, was incontrollably stirred within him to be at his old post again, directing and controlling the spirit of innovation; and he returned to Wittenberg 1522, Mar. The lawless movement, however, which had received impulse, was not to be restrained. It broke out in many quarters. Social oppression and misery added to the flames of fanaticism. The peasantry rose in arms, headed by the Anabaptist Münzer, and the horrors of a civil war raged throughout Germany. Luther exerted all his influence to stem the unhappy tide of affairs; exhorted the nobles on one hand, and the peasants on the other; and at no part of his career did he show a higher spirit and wisdom, though he has not always got the credit of this.

With his hands thus full of practical labor, he plunged at the same time into a violent controversy with Erasmus, which reflected little credit on him. Erasmus and he had hitherto, though in different ways, co-operated in the same cause; but they were men of such different spirit and temper, that a separation was inevitable. Luther had felt this for some time, but he was reluctant to come to an open breach. 'Do not join your forces to our

adversaries; publish no books against me, and I will publish none against you,' he had said in a letter 1524. On the publication, however, of Erasmus's treatise *De Libero Arbitrio*, Luther could no longer hold silence. He responded in the same year, 1525, by his counter-treatise, *De Servo Arbitrio;* and the war of words was waged hotly and vehemently between them.

Hitherto, the Reformation had not received any legal establishment. Frederick of Saxony, while warmly protecting Luther and his followers, did not yet take any steps to displace Romanism by legal enactment, setting up in its stead a Reformed church. This was now done, however, by Frederick's successor. He commissioned Luther and Melanchthon to prepare a new form of church government and church service for his dominions. His example was followed by the other princes and states in Germany that had renounced the papal supremacy. The Reformation thus obtained substantive existence and civil support. This important result showed itself conspicuously at the Diet of Spires 1526. An endeavor at this diet to suppress the new religious movement, and to insist on rigorous execution of the papal sentence against Luther and his followers, was successfully opposed by a majority of the princes and representatives of states; and it was resolved on the contrary that the princes should have full power to order ecclesiastical affairs in their own dominions as they thought proper. This resolution served greatly to extend the Reformation.

This period of progress was soon interrupted. A new diet was convoked at the same place 1529; and under the more powerful influence of the papal party, backed by the presence of the emperor's brother, who presided in the diet, the measures of the former diet were recalled, and all changes in religion declared to be unlawful except such as might be authorized by an approaching general council. It was then that the Elector of Saxony, the Landgrave of Hesse, and other princes of the empire who had already embraced the Reformation, and established it in their dominions, made a solemn *protest* against the action of this diet—a circumstance which gave rise to the name *Protestants*, which has since attached to all the followers of the Reformation. See PROTESTANT.

While the Reformation thus ran its course in Germany, and was adopted by the civil authorities in many states, it was making corresponding progress in Switzerland; and there at length also, after a famous and elaborate conference at Bern 1528, under the countenance of the civil authorities, the supremacy of the pope was abolished, and the Reformed doctrines, in even a broader and more definite shape than in Germany, were declared the only doctrine of Scripture. Bern, Zürich, and Basel continued to be the main centers of the Reformed movement in Switzerland; but the Reformed doctrines gradually ex-

tended throughout the great majority of the cantons. Chiefly those surrounding the Lake of Lucerne remained, as they remain to this day, strongly attached to the Roman Catholic faith. The chief point of difference between the reformers in Switzerland and Germany concerned the doctrine of the Eucharist. Luther, while abandoning the doctrine of a literal conversion of the bread of the Eucharist into the body of Christ, known under the name transubstantiation, held to a modification of this doctrine, erroneously called consubstantiation. The bread did not *become* the body of Christ literally, but it *contained* the body of Christ: Christ was in the bread as really 'as the sword in the scabbard, or the Holy Ghost in the dove.' Zwingli, on the contrary, and his co-reformers in Switzerland, discarded all outward presence of Christ in the Eucharist: the service in their view was merely memorial.

The dispute which arose on this subject between the reformers of Germany and Switzerland, and especially between their respective leaders, Luther and Zwingli, proved a serious impediment to the cause. Philip of Hesse sought to bring about reconciliation between them. Zwingli, Bucer, and Œcolampadius met with Luther and Melanchthon at Marburg 1529, on Philip's invitation, and held a long conference, but without result.

When Charles V. perceived the firmness of the Protestant princes in the position which they had taken, he became anxious for temperate and conciliatory measures. In an interview with the pope at Bologna, he urged, but without success, the necessity of a general council, and at the same time took means to convene personally with the princes at a new diet to be held at Augsburg. In view of this important convention, the reformers prepared, at the instance of the Elector of Saxony, a statement of their special doctrines. The basis of this, the famous *Confession of Augsburg*, were 17 articles, delivered by Luther to the elector at Torgau, which had been adopted at a conference at Schwabach 1529. These articles, enlarged and polished by the careful and moderate pen of Melanchthon, were submitted in 28 chapters to the diet which met at Augsburg 1530, June. Twenty-one chapters were occupied with the statement of the opinions of the reformers, and the remaining 7 with an exposure of the errors of popery. The reading of this confession by the Chancellor of Saxony, in name of the Protestant states, made an earnest and favorable impression on the diet. The papal authorities submitted a reply, which was approved by the emperor, and ordered by him to be accepted as a conclusion of the religious differences which had arisen. The Protestants responded instead by an answer to the papal document, afterward expanded by Melanchthon, and published under the title *Apology for the Confession of Augsburg*.

The religious schism between the emperor and many of the states of Germany seemed now approaching a

crisis which could terminate only in war. A renewed decree exceeding in severity that of Worms was launched against the reformers. They on their part appreciated the solemnity of the crisis, and met, headed by the Elector of Saxony, first at Schmalkald, then at Frankfurt, 1530, 1, when they entered into a treaty of defensive alliance, and encouraged each other in the resolution to maintain their religion and liberties against the threatened encroachment of the imperial edict. To Henry VIII. of England, then just beginning his own erratic career of reformation, they sent a special invitation to co-operate with them, on the basis of the doctrines of the *Confession of Augsburg*—an invitation to which he responded, but which issued in no practical result. The emperor, notwithstanding the strongly hostile attitude which he had assumed, was not prepared as yet to plunge into hostilities. The Turks were menacing the frontier of the empire; he had his own personal objects to gain in the advancement of his brother Ferdinand to the dignity of king of the Romans, an object which he could not accomplish without a majority of votes at an imperial diet. He was content, therefore, to enter anew into negotiations with the Protestant princes; and after many unavailing projects of reconciliation, a treaty of peace was concluded between them at Nürnberg 1532. The Protestants agreed to support him against the Turks, and to acknowledge Ferdinand as king of the Romans; while the emperor in his turn agreed to abrogate the edicts of Worms and Augsburg, and allow the Protestants free exercise of their religion until some settlement by a general council or a diet of the empire.

Such a peace could not be lasting. The Protestants availed themselves of their temporary repose to strengthen themselves and extend their power. The emperor continued to urge the pope to convoke a general council. At length, 1536, Paul III. issued a summons for a council to meet at Mantua in the following year; but the Duke of Mantua being disinclined to receive so many turbulent guests into his quiet city, the project did not take effect. In anticipation, however, and convinced that no council convened under the exclusive influence of the pope would deal fairly with the subject in dispute, the Protestants met at Schmalkald 1537, and, while solemnly protesting against a mere Italian or papal council, at the same time agreed to a new summary of their doctrines, drawn up by Luther, to be presented to the assembled bishops. This summary is known under the name of the *Schmalkald Articles,* and with the *Confession of Augsburg* and the *Apology for the Confession* constitutes to this day the doctrinal basis of the German Lutheran Church.

At length, 1546, the same year in which Luther, worn out by his many toils, died somewhat suddenly at Eisleben, a council assembled at Trent. It was soon evident that no compromise was practicable between the Protestant and the papal parties; and both sides prepared to

try the venture of war. When the Council of Trent promulgated its decrees, and the Reformed princes in the Diet of Ratisbon protested against their authority, the emperor raised an army to compel their obedience. They on their part were ready with their forces, and marched into Bavaria against the emperor. The results, in the first instance, were severely disastrous to the Protestant cause, chiefly through the division of the princes, and especially the perfidy of Maurice, nephew of the Elector of Saxony. Various attempts at reconciliation and compromise were again attempted, in which Melanchthon was prominent; but, as before, they came to nothing. A change of fortune gave temporary triumph to the Protestant arms, and the result was that Charles concluded a formal treaty at Passau 1552, which may be considered the foundation of the Protestant liberties of Germany. The Protestants stipulated for free exercise of their religion, until the meeting of a diet which should settle a permanent religious peace; and in return, they agreed to lend assistance against the Turks, who were still menacing the frontier of the empire. The promised diet assembled at Augsburg 1555, and framed articles for the religious pacification of Germany, according to which all adherents of the Augsburg Confession of Faith were left in undisturbed enjoyment of the rights which they had acquired, were freed from papal domination, and allowed to order their religious concerns as seemed best to them; Protestants and Roman Catholics alike being bound to respect each other's convictions, and not to injure or persecute each other on account of religion, under penalty of being proceeded against as enemies of the empire. This treaty of Augsburg terminates the period of the Reformation in Germany.

In the neighboring countries of Denmark and Sweden, the progress of Reformed opinions had proceeded still more rapidly than in Germany. In both these countries, the sovereigns took the lead in enlightening their people, and freeing them from the tyranny of the Church of Rome. In Sweden particularly, Gustavus Vasa showed great courage and prudence in carrying out a reforming policy. He invited learned Lutheran teachers into his dominions, and showed special zeal in the circulation of a Swedish version of the Scriptures, made by one of these teachers, named Olaus Petri, the most prominent among the Swedish reformers. At an assembly of the states at Westeras 1527, while the reformers in Germany were still struggling for bare existence, it was unanimously resolved that the Lutheran doctrines should be adopted in Sweden, and a Reformed church, entirely independent of Rome, established. The same result occurred in Denmark 1539, when an assembly of the Danish states at Odensee gave formal sanction to a plan of religious doctrine, worship, and discipline, drawn up by

Bugenhagen, disciple and friend of Luther, whom Christian III. had invited from Wittenberg for the purpose.

In France, the progress of the Reformation was much more uncertain and wavering. As early as 1523, the new doctrines had spread greatly in many parts of France, under the countenance of Margaret, Queen of Navarre, sister of Francis I., the constant rival of Charles V. The names chiefly associated with this early phase of the French Reformation, besides that of Margaret herself, are those of Lefèvre and Farel, the latter particularly a man of active and fiery zeal, originally a priest in Dauphiné, whom we find subsequently associated with Calvin in Geneva. The University of Paris became for a time strongly infected with the 'new learning,' and many of the nobility, as well as the people, were actually inclined to throw aside the traditions imposed by Rome. But the violent and inconsistent policy of Francis I., and the fierce spirit of faction which the struggle engendered, gave an unhappy turn to the course of events in France, and prevented the Reformation from obtaining in that country any such national recognition as it obtained in Germany and elsewhere. Both Farel and Calvin were driven by the violence of persecution into Switzerland. Calvin settled for a time at Basel, where he completed and published the first edition of his *Institutes*. The famous preface, addressed to Francis I., bears date Basel 1535, Aug. 1. In 1536 he repaired to Geneva, where Farel, already laboring in the work of the Reformation, retained him by a 'divine menace,' and he began his illustrious career as reformer, theologian, and legislator.

In Spain and in Italy the spread of the Reformation, which in both countries had taken an active and hopeful start, was almost entirely suppressed by the power of the Inquisition. The Church of Rome was able to bring its whole force to bear upon these countries, unchecked by political hostility, and to brand the name Protestant with the infamy which, in the popular mind, always attaches itself to hopeless failure.

The same policy was attempted in the Netherlands. More than 100,000 of the inhabitants are said to have fallen under the atrocious cruelty of Charles V. and his son, Philip II. But the spirit of political freedom and moral earnestness proved at length adequate, and finally, through a protracted and bloody conflict, more than adequate, to cope with the blood-thirstiness even of Philip and Alva; and the principles of the Reformation, after a Calvinistic type, were at length established in the United Provinces, together with the political supremacy of the House of Orange.

The Reformation in England presented peculiar features—an undercurrent of popular movement, dating even from the time of Wycliffe, and a somewhat inconsistent and wavering series of political changes during the reigns of the three Tudor princes, Henry VIII., Edward VI.,

and Elizabeth. In the beginning of the 16th c., as early as the first movements of Luther, there were indications of a revival of evangelical religious life among the tradesmen of London and the peasantry in various parts of the country, particularly in Lincolnshire. The popular mind had begun to regard with suspicion and ridicule some of the most characteristic doctrines of Romanism. The residence of Erasmus in England, in the beginning of the reign of Henry VIII., stimulated a spirit of biblical inquiry among the educated classes, which, while it remained mostly faithful to the Church of Rome, as in the case of More and others, yet helped to advance a reforming movement. The study of his Greek Testament was eagerly entered upon by a few students at both universities, especially Cambridge. We find Biling, Tyndale, and Frith associated at Cambridge 1520; and in the decade following, Cranmer, Ridley, and Latimer became prominent. It is at the end of this latter period—1529—a year before the meeting of the Diet of Augsburg in Germany, that the Reformation in England took its first decided advance. In this year, the usurpations of the clergy, and the manifold ecclesiastical abuses prevailing in the country, were the subject of parliamentary legislation. The negotiations as to Henry's divorce from Catharine had been proceeding for some time, and the country was greatly excited by the course of events. In 1533 Henry was married to Anne Boleyn, and his former marriage with Catharine declared void. All appeals to Rome were forbidden. In the two following years, the sovereign was declared the supreme head of the Church of England, with authority to redress all errors, heresies, and abuses in the church; the monasteries were dissolved; and parliament petitioned that a new translation of the Scriptures might be authorized, and set up in churches. In all this course of reformation, however, there was but little religious impulse on Henry's part, for we find him, 1539, entering violently on the path of reaction, and passing the famous statute known as the Six Articles, which rendered it penal to deny the doctrine of transubstantiation, or to affirm that priests might marry. Cranmer, who had been for some years Abp. of Canterbury, labored to prevent their passing; and Latimer resigned his bishopric as soon as they were confirmed.

With the accession of Edward VI., 1547, the Reformation greatly advanced. The statute of the Six Articles was repealed, with other reactionary measures of the close of Henry's reign. The parliament of 1548 established the use of the Book of Common Prayer; the clergy were permitted to marry; the cup was allowed to the laity; and 1551 the 42 articles of religious belief, afterward reduced to 39, were promulgated. The temporary restoration of popery under Mary, and the final establishment of Anglican Protestantism under Elizabeth, belong to the special history of these reigns.

Ireland, through its parliament, 1537, rejected the papal supremacy in favor of the royal primacy; but a great part of the clergy, headed by Archbishop Cromer, were loyal to the pope. As the sees became vacant they were filled with English prelates favorable to reform: monasteries were repressed. Edward VI. permitted communion in both kinds to the laity. His prayer-book was first used in Dublin on Easter Day, 1551. Various reforms were planned, but not carried out. With Mary the papal supremacy was restored. The ignorance of the people and of many of the priests was an obstacle to reform.

In Scotland the reforming impulses began with Patrick Hamilton about the same time that Cranmer and Latimer first appear active in England. Hamilton was educated in Paris and in Germany, and learned there the doctrines which he introduced into his native country. There was something, indeed, of the same popular movement, known under the name Lollardism in Scotland, as in England, and Hamilton's preaching may have served to kindle the dying embers of this movement. His judicial and ecclesiastical murder 1528 produced immense effect in preparing the way for the Reformation in Scotland. 'Men began,' says Knox, 'very liberally to speak.' 'The reik of Mr. Patrick Hamilton infected as many as it did blow upon' (see HAMILTON, PATRICK). After Hamilton, George Wishart appears as the next hero-martyr of the Scottish Reformation; and in connection first with him—as his reverend disciple and companion—we hear of John Knox, who became finally the great leading spirit of the movement, by whose influence popery was extirpated, and the Reformation established in Scotland 1560. The Scottish Reformation followed the type of the Calvanistic Reformation in Geneva, where Knox had taken refuge during the period of persecution in Scotland, and had been for some years the companion of Calvin. Episcopacy was abolished, and the fabric of the Reformed Kirk set up in every respect as far as possible in opposition to the papal system. See the works of Ranke, Hagenbach, Gieseler, Marheineke, Hottinger; of Merle d'Aubigné; and the works named under the titles ENGLAND, CHURCH OF; SCOTLAND, CHURCH OF.

Such is the light in which this great religious revolution presents itself to the Protestant. Roman Catholic students naturally regard it very differently; and though the name REFORMATION has come to be generally adopted as the historical designation of the religious movement of the 16th c., this name is accepted by Roman Catholics under protest only, and as a conventional phrase, whose rigorous meaning they distinctly repudiate. The more strict writers among them employ in its stead the name 'Pseudo-Reformation,' or 'So-called Reformation.'

As regards the event itself, Roman Catholics, while they admit that many abuses existed in the church which

called for reform, and many superstitions which deformed the true character of religion among the ignorant masses of the people, contend nevertheless not only that the extent and the nature of these abuses and superstitions are greatly exaggerated, but also that the task of reforming them did not imply either the necessity or the lawfulness of a separation from the church. They assert that the conduct and character of many of those most prominent in the movement prove them to have been influenced by corrupt and unworthy motives; that in their effort to throw off the obedience of Rome, they rather sought emancipation from moral and disciplinary restraint, than the purification of the religious system of the church; that the change in many of the countries in which it was effected was wrought mainly through the agency of the sovereign, with a view to appropriation of the revenues of the church; and that in others it was wrought by appealing to the prejudices of excited and unreasoning multitudes, who were taught to confound the system with its abuses, and who were incapable of distinguishing the true doctrine of the church from the superstitions justly held up for reprobation. Thus, in the view of Roman Catholics, the true REFORMATION of the church was not that which has been described above as carried out by the seceders of the 16th c., but that internal change effected by the decrees of the Council of Trent, and by the religious revival simultaneous with the sittings of that assembly. They dwell much on the fact that all the notable successes of Protestantism were in the period of its origin, and that in the words of Lord Macaulay, if Protestantism had at its first onset 'driven Catholicism to the Alps and Pyrenes,' so Roman Catholicism, in its turn, 'rallied and drove back Protestantism even to the German Ocean.'

As to the moral and religious results of the Reformation, the same difference of opinion exists. That the very necessity of action which it created had a beneficial influence on their own church, by the internal revival to which it led, Roman Catholics freely admit; but they regard the revolt against authority, the inauguration of religious innovation and skepticism, the separation from the church and the disruption of Christian unity, as heavily fraught with moral and intellectual evil; and a work of much learning has been devoted by the well-known theologian, Dr. Döllinger (q.v.), to establishing this point, by the confessions of the first reformers themselves, and their immediate successors. See *Die Reformation, ihre innere Entwickelung und ihre Wirkungen*, von J. Döllinger (3 vols. 8vo, Regensburg 1848).

For a valuable bibliography of the literature of the Reformation, see Geo. P. Fisher's *History of the Reformation* (New York 1873). See also Newman, *Manual of Church History* (1903); Walker, *The Reformation* (1900); Jannsen, *History of the German People* (1900).

REFORMED CHURCH IN AMERICA (DUTCH): descendant of the same church in Holland, there first known as 'the Churches under the Cross,' and completely constituted 1563 at Antwerp by the establishment of a synod, and the adoption of the confession and catechism maintained to this day. The Dutch W. India Co. always sent with emigrants a pious schoolmaster, called Ziekentrooster, or Comforter of the Sick, whose piety, or at least seriousness of life, was well guarded by a multiplicity of duties besides teaching and comforting, such as doing service as sexton, bearing the state cushion before the director or gov., presiding at religious meetings, leading the singing, and reading sermons (in the absence of a regular ministry), catechizing, and giving out funeral invitations. When Director Minuit arrived at the trading-post on Manhattan Island 1620, two Ziekentroosters were chosen, Sebastian Jansen Krol and Jan Huyck. Not until 1628, Aug. 11, did the first minister arrive, the Rev. Jonas Michaelius; he first established the form of a church; two elders were chosen, and, at the first administration of the Lord's Supper, there were full 50 communicants, Dutch and Walloons (Flemish), besides some French, to whom the pastor administered the rite in their own language and mode. Dominie Everardus Bogardus came in 1633. In a horse-mill, probably for grinding grain, prayers had been read during seven years; then a frail wooden church was built on the shore of the East river, in Pearl st., between Whitehall and Broad sts. Here the people worshipped until 1642, when the famous navigator De Vries said to Gov. Kieft, 'It is a shame that the English, when they visited Manhattan, saw only a mean barn, in which we worshipped; the first thing they built in New England, after their dwelling-houses, was a fine church.' Soon afterward, a subscription paper was passed around at the wedding of a daughter of Dominie Bogardus, with a success due in part, perhaps, to accompaniments of the feast. With John and Richard Ogden, of Stamford, Conn., as contracting masons, a church 72 by 50 by 16 ft. was built within the fort, the present Battery, and called the St. Nicholas; there the people worshipped until 1693, when a new church was ready on Garden st. (destroyed in the great fire 1835). This was the first of the Collegiate Ref. Dutch edifices of New York, and named the South Church when the colleagued North one, corner Nassau and Cedar sts., was dedicated 1729 (not long since used for post-office and now supplanted by the Mutual Life Ins. Building); and this in turn was called the Middle Church when the North one was opened 1769, corner of Fulton st. and 'Horse and Cart lane' (William st.)—now demolished, but memorable for the 'Fulton st. prayer-meetings.' In the progress of time, the Middle became the South Church, when the temple until lately in Lafayette Place occupied a central position, dedicated 1839, and the marble edifice on Fifth ave. and 29th st., finished 1854, was the most northern of the three Col-

legiate churches. Now there are added two Collegiate churches in Harlem, the 'First,' with its tall slender spire of stone, on Lenox ave., and the 'Second,' on East 121st st., besides nearly 20 others within the city limits, belonging to the same denomination. The bell of the old Nassau St. Church, cast in Amsterdam 1731, into the molten metal of which it was said that a number of burghers threw pieces of silver, was paid for by a legacy for the purpose made by Col. Abraham De Peyster, bore a legend 'legacy to the Low Dutch Church of New York,' rang in its place a century, and from its size and far-ringing tones was called the 'Fireman's Bell;' it was, not long since, hanging in the tower of the former Lafayette Place structure, but now rings in the church on Fifth ave. and 48th street.

Among the customs of the old Dutch churches were the black-silk ministerial gown; the psalms of the day posted in conspicuous movable figures; the short silent prayer, with hat-covered face, by the minister before ascending the pulpit; the reading of the Scriptures, and, in the afternoon, reciting the Apostles' Creed, by the clerk in front of the pulpit; his reception of all notices and passing them up on a long pole to the dominie in the high pulpit; the timing of the sermon by an hour-glass, watched by the clerk, whose duty was to rap thrice with his cane if the preacher exceeded an hour; and the brief address to the deacons by the preacher before they passed the black-velvet collecting bag, fastened at the end of a pole and with a little bell attached.

This sketch of the origin and rise of the Dutch Church in New York had parallel in many other localities across the East and Hudson rivers, and especially along the rivers of New Jersey and the Hudson and Mohawk. In 1719 a movement was made to rear and ordain ministers, so as not to depend on supply from the mother country. After some years, consent was given to the formation of a synod, which was accordingly constituted, though some conservatives withdrew and formed a separate organization. The disruption was finally healed by a plan of union, effected by Dr. John H. Livingston 1770. The perfected organization took its present form 1812, and in 1867 the name was changed from Reformed Protestant Dutch Church in N. America to Reformed Church in America.

The old Ref. Dutch polity, which is strict Presbyterianism, has been retained for the most part. There is a consistory, comprising elders and deacons, each serving two years, who have power to call a minister, to receive and dismiss members, and, with few exceptions, are trustees of the church property. The consistory is elected by the church, the synod of 1889 making 18 years of age the limit in the right to vote. Those who have held the office of elder or deacon constitute the 'great consistory,' summoned to advise on unusually important occasions. The classis, corresponding to a presbytery, is constituted of the minister and one elder from each

church in a convenient region. There is one general synod, five particular synods, and 35 classes, representing 652 churches and 700 ministers. The doctrinal position of the denomination is firmly intrenched in five creeds, the Apostles', the Nicene, the Belgic, the Canons of Dordrecht, and the Athanasian, the latter the most rigid of the three 'catholic' creeds. The constituency of the church has never been widely scattered, but has followed with uniformity the directions Dutch immigration has taken. To-day it is mainly found doing its work throughout the states of Pennsylvania, New York, and New Jersey, and also in a fair number of western states. Its doctrinal standards, its liturgy, together with its rules of government make up its constitution. The use of its liturgy, which has come down from the Church of Holland, is optional, except for the forms for the Lord's Supper, the baptismal forms, and those for ordination. Before occurrence of the Lord's Supper, it is enjoined on minister and elders to inquire into the doctrinal and practical good standing of communicants. The Ten Commandments are read at the morning service every Sunday, and the Apostles' Creed usually at afternoon or evening service.

The doctrine of the church is moderately Calvinistic. What are known as the 'doctrines of grace' are given emphasis in all its standards, and the basis of its thought is Divine Sovereignty. Its standards of doctrine are the Belgic Conference, the Heidelberg Catechism, and the Canons of the Synod of Dort, and include also a compendium explanatory of the catechism. The Heidelberg Catechism is required to be gone over in pulpit exposition once every four years, and to be taught in families and Sunday-schools; in the latter its use is exclusive by vote of the gen. synod 1889. In 1767 the consistory of the Collegiate Church of New York, on account of the declining use of the Dutch language, moved to substitute Eng.; and in 1789 a book of psalms and hymns in Eng., prepared by the Rev. Dr. Livingston, was approved and came into use.

According to the last report of the gen. synod, 1902, there were in this communion 628 churches, 695 ministers, 48 candidates, 61,775 families, 110,456 communicants, 35,421 catechumens, 7,175 baptisms, of which 5,897 were infants and 1,278 adults. There were 921 Sunday schools, with 124,672 pupils. One-third of the members of the church are in the Sunday schools as officers, teachers, or scholars. The contributions to denominational benevolence aggregated $276,028; to other benevolence $115,203; to congregational support and objects $1,231,464. The amount received by the Board of Domestic Missions from all sources was $95,243 for the mission work and about $8,000 for Church building fund. Annual contributions to foreign missions were $114,057.

The foreign missionary work as denominational, in-

dependently of the A. B. C. F. M., began 1857. The principal mission is the N. and S. Arcot, in the Madura district in s. India, organized 1854. There were (1891) 117 outstations, 7 missionaries, 8 asst. missionaries, 9 native pastors, 50 native assistants and catechists, 24 asst. catechists, 86 Anglo-vernacular schoolmasters, 13 readers, 31 schoolmistresses and zenana teachers, 12 colporteurs, 13 Bible readers, 5 zenana women; communicants 1,996, and baptisms of adults not communicants 654. The N. Japan mission, organized 1859, has 5 missionaries and 9 assistants; and the S. Japan 4 of the former, 8 of the latter, and 1 teacher; but much of the work is carried on in connection with the 'United Church' in Japan, and is not reported separately from that. The Amoy mission in China has 11 churches, 14 outstations, 7 missionaries, 13 assts., 11 native ordained, 19 native helpers. The mission in Arabia, organized in 1889, has 4 missionaries. The general statistics of 1896 are a gain of 50 per cent on those of 1886.

The oldest college under the auspices of the denomination is Rutgers (q.v.), at New Brunswick, N. J. Connected with it is a theol. seminary, opened in 1785, and having 8 buildings, a library of 43,000 vols., and a fund of $400,000: its report for the year ending 1890, May 1, states the income $7,500, expenses $8,285, bequests $2,038; a scholarship fund $111,071; 5 professors, and 42 students in the year 1894–5. Hope Coll., at Holland, Mich., founded 1865, has 9 professors, 4 lecturers, 69 collegiate students; and the grammar school has 11 teachers and 140 students; also a theological school. It has a library of 20,000 vols., and, so far as the mixed form of the report gives data, a contingent fund $13,664, and a total investment $123,499. The theol. school connected with it has 3 professors, 1 lector, 22 students; and some items of endowment foot up $35,348. The Northwestern Classical Acad., in Iowa, has 72 students and 4 teachers. In all these institutions, the church board of education has 106 students receiving aid. A theol. dept., under William W. Scudder, D.D., is connected with the Arcot mission in India, having 15 students.

For several years negotiations have been in progress looking to union between this body and the Reformed Church in the United States (German). The two bodies have much in common—not only name, but church govt., adherence to the Heidelberg Catechism, and the same sacramental forms and other features of liturgy. Committees from the two gen. synods have met and reported—that of the German synod, 1890, recommending a federal union of the two communions, with a representation that shall have ultimate authority in regard to new missions, both domestic and foreign, new educational institutions, and the departments of religious publication. The report was adopted. On its part, the Reformed Church (Dutch) appointed a committee to draw up a plan of union. If united, the two denominations would have about 2,000 churches, 270,000 communicants, over 1,300 ministers, 20 institutions of learning, and 5 publishing-houses. They are already in

the Alliance of Reformed Churches, characterized by the presbyterial form of govt., and the recent movement was a step toward one national, and perhaps international, Reformed church; but the plan was dropped in 1894.

The organ of the Reformed Church (Dutch) is the *Christian Intelligencer*, of New York, long and well known for its ability and literary excellence. The new *Presb. and Ref. Review* represents this body and the Presb. churches, as its name indicates. Besides these there are the smaller papers devoted to missions or other branches of work.

REFORMED CHURCH IN THE UNITED STATES (GERMAN): lineal descendant of the same church in Germany, which took its type from Melanchthon and Calvin, when a party dissented from Zwingli and Luther and made the Heidelberg Catechism its standard. It assumed form first in the Palatinate, whose elector, Frederick III., appointed certain Heidelberg professors to compose the catechism, published 1563. This became the symbol of Ref. churches, not only in Germany, but also in neighboring countries, including Holland. It is the only creed of this denomination in the United States, and was imported with the first immigrants of that faith 1684, who, with their successors, formed settlements in Penn., and to some extent in the seaboard colonies south. The first known minister of this body, Philip Boehm, came 1720 and settled near what is now called Boehm's Church in Montgomery co., Penn. The first synod was constituted 1747, within a few days after the first synod of the Ref. (Dutch) Church. In 1793 there were nearly 150 churches; and in years following other synods were organized in neighboring states. Not until 1863 was a gen. synod formed, supreme over the others as a court of appeal and advice. It meets once in three years, and, like that of the Ref. (Dutch) Church, is composed of representatives from the classes, which are grouped in local synods.

The Heidelberg Catechism, which defines the doctrines of this church, teaches the natural depravity of man, and salvation by free grace, but differs from the stricter Calvinism in omitting the doctrine of reprobation; it agrees with Calvinism, and disagrees with Lutheranism, in holding only to the spiritual presence in the symbols of the Lord's Supper. Pedobaptism is taught and practiced, but the views of this church incline to what is now known as Christian nurture, involving a constructive membership of the baptized in the church body, to be ratified by individual confession, termed confirmation, on reaching suitable age. In harmony with this practice, approved in theory if not carried out in form by many in various orthodox communions (and ably set forth in Horace Bushnell's *Christian Nurture*), is the entire mode of statement in the 'Mercersburg Theology' (q.v.), advocated by the Rev. Drs. Rauch and Nevin of this denomination. As baptized children of believing parents may be considered as having an organic relation

to the church, not merely under an individual pledge of faithfulness on the part of individual parents, so the church has an organic relation to Christ, lifting it into oneness with him and the Father; and so, also, mankind is an organic unity in sinfulness, from which the redeemed are separated into a new common life. The most peculiar points of the theory were in respect to the sacraments as somehow mystically conveying increased life to the believer, who receives somewhat besides his being simply and individually quickened by their sensible impressiveness and by his own personal communion with Christ on sacramental occasions; also, in respect to regenerating power as conveyed in and through the church—not solely a direct action of the Divine Spirit on the soul, irrespective of the spiritual power residing in the whole body of believers. All this, agreeable to much of the N. Test. language, is regarded now as a quite innocent and suggestive mode of stating spiritual and unfathomable truths, adopted from the phenomena of organic nature, which must furnish much of the imagery of the deeper spiritual facts; and hence this theology, which excited alarm and discussion before German modes of thought had become more or less incorporated into the thinking and expression of English-speaking theologians, is now regarded as sufficiently orthodox, or rather as a high form of orthodoxy, provided the element of German philosophico-mysticism does not push the statements so far as to approach a physical theory of spiritual facts, and to lose the great fact of individual responsibility and relations to God in the idea of generic solidarity. German *theology* anticipated by many years the tendency of more recent scientific evolutionism to conceive of everything under the figure of life and growth, in place of the old mechanical conceptions; and, within due bounds, the idea is as helpful as it is misleading when carried to extremes. Analogy is a good servant, but a bad master. The liturgical bearing of the Mercersburg Theology, as well as the theological, gave rise to much discussion. The denomination inherited a liturgy, and it was the subject of agitation ten years since, but harmony was brought about. The use of the liturgy is to a considerable extent optional.

The statistics of the church as reported (1902) are: Classes, 58; ministers, 1,112; congregations, 1,691; members, 255,408; infant baptisms, 13,437; adult baptisms, 1,830; confirmed, 11,366; communed, 255,408; S. S. 1,662; officers and teachers, 24,796; scholars, 200,178; benevolent contributions, $283,954, including $60,000 for home and $47,710 for foreign missions, and for congregational purposes, $1,396,654; showing an increase in 3 years of 33 ministers, 76 congregations, 11,000 members, $64,867 in benevolent contributions, and $303,449 for congregational purposes.

The foreign missions are in India, China and at Tokio and Senday in Japan, where there were (1890) 7 preaching stations; 8 churches (of which half were self-supporting); 482 baptisms of adults; 1,202 communicants; 3 schools, with 209 pupils; 16 Sunday schools, with 719 attendants; 1 theol. school, with 9 students; and 7 native preachers Other missionary work has been done among N. Amer. Indians.

Of educational and charitable institutions there are 8 colleges and universities, 9 academies and institutes, 3 theol. seminaries, and 4 orphanages, The first college founded was at Mercersburg, Penn., 1836. The strongest institution is Franklin and Marshall Coll., organized at Lancaster, Penn., 1853; in 1901 it had 15 teachers, 403 students, productive funds $346,000, other property $250,000; and library of 36,000 vols. Connected with it is a theol. seminary, founded at Carlisle, Penn., moved to Mercersburg 1836, thence to Lancaster. Heidelberg Univ. and Seminary was established at Tiffin, O., 1850 and had (1901) 12 teachers and 190 students; and Ursinus Coll. and Seminary at Collegeville, Penn., 1870, and had (1901) 11 teachers and 190 students. There are also the Palatinate Coll., at Myerstown, Penn.; Catawba Coll., Newton, N. C.; Calvin Institute, at Cleveland, O.; and a theol. seminary at Howard's Grove, Wis., besides classical and female schools. The orphanages are at Womelsdorf, Berks co., and Butler, Butler co., in Penn.

REFORMED CHURCH IN THE UNITED STATES, THEOLOGICAL SEMINARY OF THE: oldest theol. seminary of the Reformed Church in the United States; founded at Carlisle, Penn., 1825, with one professor and five students. In 1829 it was removed to York, and 1837 to Mercersburg, where, in connection with Marshall College, having in its faculty such eminent men as Nevin and Schaff, it had great prosperity, and became famous as the home of 'Mercersburg Theology' (q.v.). When Marshall College was removed to Lancaster the seminary remained at Mercersburg. Thirty-five years later the seminary also was removed to Lancaster. It is under the control of the three eastern synods (English) of the Reformed Church. There are four or five fully endowed professorships, besides a teacher of elocution. The library contains about 15,000 vols. The students in attendance number about 60. The pres. is Emanuel V. Gerhart, D.D., LL.D.

REFORMED CHURCHES: term employed in a conventional sense, not to designate all the churches of the Reformation, but those in which the Calvinistic doctrines and still more the Calvinistic polity prevail, in distinction from the Lutheran (q.v.). The influence of Calvin proved more powerful than that of Zwingli, which, however, no doubt considerably modified the views prevalent in many of these churches. The R. C. are very generally known on the continent of Europe as the *Calvinistic Churches*, while the name *Protestant Church* is in some countries almost equivalent to *Lutheran*. One chief distinction of all the R. C. is their doctrine of the Lord's

Supper, characterized by the utter rejection not only of transubstantiation, but of Lutheran views of the presence of the body and blood of Christ in the elements—the point mainly of the long controversy between the Lutherans and the Reformed: see LORD'S SUPPER: SACRAMENTARIAN. The R. C. are unanimous also in rejection of the use of images in worship, and of various ceremonies which the Lutherans have thought proper to retain. Among the R. C. are those both of England and Scotland, notwithstanding the episc. government of the former; the Prot. Church of France, that of the Netherlands, many German churches, the Prot. churches of Hungary, Poland, etc.; with those in America which have sprung from them.

REFORMED' EPIS'COPAL CHURCH: see EPISCOPAL CHURCH, REFORMED.

REFORMED' PRESBYTE'RIAN CHURCH IN NORTH AMERICA, called frequently THE COVENANTER CHURCH: descendant of the church in Scotland of that name: see CAMERONIANS. Its origin, though not its constitution, dates back to the National Covenant of Presb. reformers in Scotland, 1580, the object of which was to combine against the schemes of the Papal Church. The attempt of James VI. (I. of England) to introduce episcopacy into Scotland 1617, followed by a similar effort by Charles I. 1637, brought about a renewal of the covenant (1638) and armed resistance, which, after some postponement, resulted in defeat of the king. The opposition to him by the Long Parliament, and the massacre of Protestants in Ireland, precipitated a crisis that led, 1643, to adoption of another pledge, known as the Solemn League and Covenant, which had in view the establishment of the non-prelatical Reformed religion throughout the United Kingdom: see COVENANTS. The Westminster Assembly's creed was adopted in Scotland 1647, and the next year the organization of the Ref. Church further perfected. Many years of persecution attended the effort of Charles II. to impose prelacy on the Scots; and, when William and Mary gave royal sanction to Scotch Presbyterianism, but asserted royal authority over the Ref. churches, those which dissented from such supremacy dispensed with ministers rather than give up their ecclesiastical freedom. Thus the sovereign headship of Christ over the nation became a cardinal principle of the Ref. Presb. Church, both in Scotland and in America, explaining a disruption of the body in the United States, and its attitude toward the question of 'God in the constitution.' In 1706 the Rev. John McMillan, and 1743 the Rev. Mr. Nairn, joined the pastorless flocks in Scotland, reconstituting in regular form the Ref. Presb. ministry.

In 1752 the Rev. John Cuthbertson, of this ministry, came to this country, followed by the Rev. Messrs. Linn and Dobbin 1774, in which year a presbytery was formed; but in 1782 it was partly merged in a new Associate Ref. church—a body made up of Ref. Presbyterians, the subject of this article, and of certain dissenters from the established church of Scotland who were known as Associate Synod. Those of the latter who would not agree to the union continued under their name until 1858, when they united with the Associate Ref. Church, under the designation United Presb. Church. Those of the Ref. Presb. Church who would not enter into the Associate union, 1782, maintained their name, and were cared for by ministers who came to this country, the Rev. James Reid arriving 1790 and beginning the work of founding a church in New York. The Rev. Messrs. McKinney and King, with the Rev. Mr. Gibson from Ireland, constituted a presbytery 1798, under the name the Rev. Presbytery of the United States of N. Amer.

They reaffirmed the Presb. system so far as it 'binds to duties not peculiar to the church in the British Isles, but is common to all lands.' In particular, they discarded in worship the use of instrumental music and of hymns of human composition—a principle still adhered to strictly by churches of this order in New York and elsewhere, the old Scotch version of the Psalms revised only being used. The R. P. Church in New York was a pioneer in Sabbath-school and anti-slavery work. Opposite its oldest church, in Chambers st., was the city almshouse, and there a member of the church, the widow Grant Bossing, began a Sabbath school for poor children, near beginning of 19th century. Dr. Alexander McLeod, the first pastor, ordained 1801, published a sermon 1802, *Negro Slavery Unjustifiable.*

In 1809 a synod, representing three presbyteries, was formed in Philadelphia; and 1823 a Gen. Synod was constituted, composed of delegates from the presbyteries.

The doctrinal standards are the Westminster Confession of Faith, Catechisms, Larger and Shorter, and *Reformation Principles Exhibited;* and these have been interpreted more or less in the *Christian Expositor*, edited by Alexander McLeod, D.D., of New York, who also published an *Ecclesiastical Catechism.* The *Reformation Principles*, issued 1807, was republished 1843, with a note, showing that in receiving the Westminster Confession, the church did not assent to investing civil magistrates with power in ecclesiastical affairs.

During the early history of the church in the United States, the members generally refrained from voting in civil elections on account of slavery, and because there was not in the United States constitution a distinct recognition of God as Supreme Ruler.

In 1831, Aug., General Synod met in Philadelphia, when the following resolution was passed: '*Resolved*, that this Synod recommend that the points of difference in the application of our principles to the civil institutions of the United States be discussed through the medium of *A. C. Expositor*, under the head of *Free Discussions*, and that every member of Synod have full liberty to avail himself of this public vehicle.'

In 1833, at Philadelphia, while General Synod was in process of organization, about half of the ministers and ruling elders precipitately withdrew, and organized another synod, which has since been known as the Synod of the Reformed Presbyterian Church (see below). These two synods stand practically on the same doctrinal platform, the only difference being that in reference to civil relations, the General Synod stands on the resolution of 'Free Discussions,' leaving the question with the citizen himself, provided no relation involving immorality be assumed, while the Synod professes to make it a term of fellowship that none of its members shall vote or hold office under the U. S. constitution. The R. P. Church took action in 1800 that no slave-holder should be admitted to full communion.

The Synod numbers (1902) 126 ministers, 112 congregations, and about 9,700 communicants, besides a large number of adherents. The total amount of contributions for 1901-02 was $199,079.

Two literary institutions are connected with General Synod, one in Cedarville, Greene co., O., the other in Minneapolis, Minn. The foreign missions are in China and India (established 1836), Asia Minor, Syria and Cyprus, and the work in those countries has been carried on with success. The Board of Home Missions has an Indian mission in Oklahoma. The funds of the church include endowment and Lamb Funds $60,000, sustentation fund $10,000. Contributions for home and foreign missions amount to $8,000 yearly.

The Synod of the Reformed Presbyterian Church (previously referred to) numbered (1896) 124 churches, 124 ministers, and about 10,000 communicants. Its theol. seminary is in Allegheny, Penn., with 5 professors and 36 students; one college, in Beaver Falls, Penn., a foreign mission in Syria, established before 1850, with missions among the freedmen, the Jews, and Chinese.

REFORM SCHOOLS: schools for the reformation and education of Juvenile Offenders (q.v.). According to 1900 census, there are about 92 reform schools in the U. S. These institutions exist in all the states of the North Atlantic division; in most of the North Central; and in two or three each of the other divisions. Of the inmates, 20,041 were boys and 5,296 girls, the latter in separat
departments or institutions, and the distribution was
follows: N. Y., 5,403; O., 1,904; Penn., 1,916;
1,072; Mass., 1,093; Mich., 1,529; Ind., 751; Conn
N. J., 658; Wis., 561; Io., 643; Ill., 1,628; M
Minn., 518; Ky., 1,009; R. I., 398; Neb., 243;
Cal., 508; D. C., 296; Me., 226; Colo., 262
La., 63; Vt., 157; Del., 185. Excluding colo
linquents 19,184 were white, and of these
and 5,506 of foreign born parents.
teach agriculture, carpentry, shoe
occupations, including printing,
cigar-making, brush-making, an
of these schools the pupils do
etc. The duration of work r
in the school room, and l
tries. Industrial traini
R. S., printing and sh

The first instituti
established at Chi
by Capt. Brento
53, led to fou
dated 1866.
the princi
substitu
truste
or r
th

REFRACT, v. *rē-frăkt'* [F. *réfracter*, to refract—from L. *refractus*, broken up or in pieces—from *re*, back; *fractus*, broken; *frangĕrĕ*, to break: It *rifrangere*, to deviate from]: to break, as the natural course of the rays of light; to cause to deviate from a direct line, as rays of light. REFRACT'ING, imp. REFRACT'ED, pp.: ADJ. bent back at an acute angle. REFRACT'IVE, a. *-frăkt'iv*, allowing or favoring refraction. REFRAC'TION, n. *-shăn* [F.—L.]: the bending of a ray of light toward the perpendicular when it passes into a denser medium, as from air into water, and from the perpendicular when it passes into a rarer medium, as from water into air [illegible]: in *mech.* the incurvation

as
Md.,
.., 689;
do., 877;
Kan., 312;
, N. H., 146;
red juvenile de-
8,955 were native
Industrial schools
-making, and other
tailoring, cane-seating,
d hosiery. In nearly all
, the baking, laundry-work,
anges from 1½-6 hours daily
½-10 hours daily in the indus-
ng is growing in favor rapidly in
oe-making being the most popular.
on in Eng. was a reformatory for girls,
swick 1834, the Victoria Asylum, founded
n. Conferences in Birmingham, 1851 and
r Reformatory School acts 1854-57, consoli-
establishing in English criminal jurisprudence
ples that remedial imprisonment for children be
ted for punitive; that the work of reform be in-
d to voluntary earnest laborers; and that the criminal
neglectful parent be compelled to pay something toward
ne reformation of his child. In two English schools 65 and
75 per cent. of the inmates were reclaimed; at Mettray in
France 85 per cent.; at the Rauhes Haus, Hamburg, 91 per
cent.; and similar results are reported in the United States.

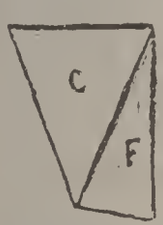
REFORTIFY, v. *rē-fŏr'tĭ-fī* [*re*, again, and *fortify*]: to fortify anew.

pose Wollaston's discovery of the *fixed lines* in the Spectrum (q.v.), without whose aid all such observations are of comparatively little value. The lines B, D, and H, which we have selected for the table, correspond to definite rays of red, orange, and violet respectively.

Substance.	Refractive Index.			Dispersion
	B.	D.	H.	H—B.
Flint-glass	1·6277	1·6350	1·6710	0·0433
Crown-glass	1·5258	1·5296	1·5466	0·0207
Water	1·3310	1·3336	1·3442	0·0132
Turpentine	1·4705	1·4744	1·4939	0·0234

The numbers in the last column roughly show how far the red and violet are separated by prisms (of a given angle) of the various substances; and even this brief list shows how erroneous was Newton's idea that dispersion is proportional to refraction, an idea which led him to the conclusion that an Achromatic (q.v.) combination was impossible.

Thus we see that the refractive indices of flint and crown glass are (approximately) as 16 : 15, while the dispersive power of flint is more than double that of crown.



Hence, if we construct prisms of the two materials, such that the angular separation of red and violet which they produce shall be equal, the angle of the flint will be far less than that of the crown, and the whole refraction also less. The combination of two such prisms, with their edges turned opposite ways, as in the cut, will thus bend (or refract) a ray of white light without separating the red from the violet—and thus we may obtain *refraction without color.*

This is not strictly the case, on account of what is called *Irrationality of Dispersion*, whose existence appears from the above table. Thus, if we form two spectra, by means of properly constructed prisms of different media, such that the lines B and H coincide, the lines D will not generally coincide. In other words, some substances draw out the red end of the spectrum more than the violet—and *vice versa.* Thus, from the above table,

	D—B.	H—D.
Flint-glass	0·0073	0·0360
Crown-glass	0·0038	0·0170

But 73 : 360 :: 38 : 187; hence we see that the distance from B to D in flint bears a less proportion to that from D to H than it does in crown. Thus if, by proper arrangements, as before mentioned, B and H be made to coincide, D will be nearer the middle of the crown spectrum than of the flint. Hence a double achromatic lens, composed of flint and crown, may be made to refract equally any *two* colors of the spectrum; but there will be a slight non-accordance of the remaining colors. *Three* colors may be made coincident by using a *triple* lens, but this is now rarely constructed. See further under REFRACT.

REFRACTORY, a. *rĕ-frăk'tėr-ĭ* [L. *refractārĭŭs*, stubborn; *refractus*, broken up (see REFRACT): F. *réfractaire:* Sp. *refractario*]: difficult to manage; obstinately unyielding; perverse; in *chem.*, difficult of fusion. REFRAC'TORILY, ad. *-lĭ.* REFRAC'TORINESS, n. *-nĕs*, perverse or sullen obstinacy.—SYN. of 'refractory': stubborn; obstinate; perverse; unruly; contumacious; unmanageable; ungovernable.

REFRAGABLE, a. *rĕf'ră-gă-bl* [L. *refrāgor*, I oppose or resist—from *re*, back; *frango*, I break]: that may be opposed or resisted; capable of refutation.

REFRAIN, v. *rĕ-frān'* [L. *refræno*, I hold back or in with a bridle, I check—from *re*, back; *frænum*, a bridle: It. *raffrenare:* F. *refréner*]: to restrain; to keep from action; to keep one's self from action or interference; to forbear. REFRAIN'ING, imp. REFRAINED', pp. *-frānd'*.—SYN. of 'refrain': to withhold; abstain; forbear; hold back; curb; govern.

REFRAIN, n. *rĕ-frān'* [F. *refrain*, a refrain—from OF. *refraindre*, to break—from L. *refran'gĕrĕ*, to break in pieces—from *re*, again; *frangĕrĕ*, to break: Sp. *refran*, a proverb]: the burden of a song or piece of music—so named, as it *breaks up* a song into equal parts—being repeated at close of every stanza.

REFRAME, v. *rē-frām'* [*re*, again, and *frame*]: to frame anew.

REFRANGIBLE, a. *rĕ-frăn'jĭ-bl* [F. *réfrangible;* It. *refrangibile*, refrangible—from L. *re*, again; *frango*, I break in pieces]: capable of being turned out of a direct course when passing from one medium into another, as rays of light passing from air into water. REFRAN'GIBIL'ITY, n. *-bĭl'ĭ-tĭ*, the disposition of rays of light to be turned out of their direct course in passing from one medium into another.

REFRESH, v. *rĕ-frĕsh'* [*re*, again, and *fresh*, which see: mid. L. *refrescārĕ;* OF. *refreschir;* F. *rafraîchir*, to refresh]: to relieve or revive after fatigue or depression; to give new strength to; to invigorate; to improve by new touches. REFRESH'ING, imp.: ADJ. reviving; reanimating: N. relief after pain, fatigue, or want. REFRESHED, pp. *rĕ-frĕsht'*. REFRESH'INGLY, ad. *-lĭ.* REFRESH'ER, n. *-ėr*, one who or that which refreshes; a fee to insure attention or expedition, as to a counsel. REFRESH'MENT, n. *-mĕnt*, new strength or vigor received after fatigue or depression; that which strengthens or invigorates, as food or rest.—SYN. of 'refresh': to revive; renovate; renew; refrigerate; invigorate; reanimate; restore; recreate; enliven; cheer.

REFRIG'ERANTS, in Medicine: internal and external cooling remedies. Those for internal use cause a refreshing feeling and a sensation of coolness throughout the system, though they do not in reality diminish the temperature of the body. Their principal use is in the treatment of febrile and inflammatory affections. The following are the most usual internal refrigerants: citric and tartaric acids taken in combination with bicarbonate of potash as effervescing draughts, ripe oranges, lemons (in the form of lemonade). Cold is of great value in the treatment of wounds, especially such as are made in surgical operations. The local temperature can be thus continuously moderated, care being taken that it is not too much reduced, so as to occasion gangrene. In most cases, local cooling is best effected by water of the desired temperature. Cloths wetted with it are spread over the surface which is to be acted on, their original low temperature being retained either by their being continuously dripped upon by means of a bundle of threads inserted in a reservoir of cold water, and acting like a siphon, or by their being frequently rewetted or changed. Their surface should be exposed as freely as possible to the air, so as to secure ample space for evaporation. In cases where great cold is required—e.g., strangulated hernia, inflammation of the brain and its membranes, or fever with well-marked cerebral symptoms—ice-bags, or coils of rubber tubing through which runs a continuous stream of cold water, are preferable to wetted cloths.

The application of cold, either through the medium of air or water, to the body generally is a subject of great importance. The use of cold air is seen in febrile cases, in which the physician directs the sick-room to be kept cool, and the patient (unless in exceptional cases) lightly clothed. Paget reports that the most successful results in pyæmia that have fallen under his observation were those in which the patients were freely exposed to the air. Cold baths, or sponging with ice-water, are of great service in reducing the temperature and subduing the nervous symptoms—delirium, etc.—in typhoid fever and other febrile affections.

REFRIGERATE, v. *rĕ-frĭj'ėr-āt* [L. *refrigĕrātus*, made cool or cold—from *re*, again; *frīgus*, cold: It. *refrigerare*, to refrigerate: F. *réfrigérant*, cooling]: to make cold or colder; to lessen the heat of; to refresh. REFRIG'ERATING, imp. REFRIG'ERATED, pp. REFRIG'ERANT, a. *-ănt*, cooling; allaying heat: N. a medicine which cools or abates heat (see REFRIGERANTS, in Medicine). REFRIG'ERATOR, n. *-ā-tėr*, a vessel for cooling liquids, or for condensing hot vapors into liquids (see REFRIGERATING MACHINES). REFRIG'ERA'TORY, a. *-ėr-ā'tėr-ĭ*, cooling: N. the vessel or apartment in which hot liquids are cooled, or hot vapors condensed into liquids—same as *refrigerator*. REFRIG'ERA'TIVE, a. *-ā'tĭv*, cooling: N. a medicine that allays heat. REFRIG'ERA'TION, n. *-ā'shŭn* [F.—L.]: act or state of being cooled; abatement of heat.

REFRIGERATING MACHINES.

REFRIG'ERATING MACHINES: apparatus for producing ice, or for decided lowering of temperature: see ICE. Such apparatus is now of increasing importance. The production of cold artificially is effected by various means, involving the use of more or less complicated machinery. When a body, in the broad sense, is rarefied, passing from the solid to the liquid or to the gaseous state, or from the liquid to the gaseous state, or, being a gas, expands against pressure, energy is expended. Hence energy must be supplied to the body in question when acting as described. This energy is practically supplied as heat. If none is directly applied, and the rarefaction is produced without heat, then the body expends its own heat energy in the mechanical or physical work of rarefaction, and grows cold. In the well-known phraseology, its heat becomes latent. This general principle is utilized in refrigerating or ice machines.

The most familiar one in everyday life is the ice-cream freezer, depending on the liquefaction of ice. Salt possesses a slight affinity for water. Mixed with ice, it tends, in a limited sense, to combine with it, and can do so only by liquefying it. The ice, in changing from the solid to the liquid state, does work, and heat energy is expended, causing a lowering of the temperature. When a solid dissolves in water, it undergoes the change from the solid to the liquid state, and absorbs heat. Ice machines have been based on this principle. Ammonium nitrate is a favorite salt for the purpose. Such machines consist of a vessel in which the solution is effected. This vessel should be of non-conducting material. Within it is placed a vessel of thin metal, containing the water to be frozen. The salt used is placed around the metal vessel; the proper amount of water, which may have been previously refrigerated by the same process, is added; the mixture is well stirred, and the temperature rapidly falls. After some time a more or less perfect cake of ice is produced. (See FREEZING MIXTURES.) There are many freezing mixtures which can be used in processes of this type, of which a number are here given. It is interesting to recall in this connection the old method of cooling water by gunpowder. The latter, containing potassium nitrate (saltpetre), cools water to a small extent when added to it, and can be used with water in the outer vessel of an ice-cream freezer or of an extemporized water-cooler, for cooling water.

FREEZING MIXTURES.

	Parts by weight.	Cooling in degrees F.
1. Sodium sulphate.....	8	From plus 50° to 0°
Hydrochloric acid....	5	
2. Sodium sulphate.....	3	From plus 50° to —3°
Dilute nitric acid.....	2	
3. Sodium sulphate.....	6	From plus 50° to —11°
Ammonium nitrate..	5	
Dilute nitric acid.....	4	
4. Snow or ice	3	From plus 20° to —14°
Calcium chloride.....	4	

Many other mixtures could be given. A mixture of

ammonium nitrate and ammonium chloride in equal parts, with enough water to dissolve them, gives good results.

The volatilization of liquids is one of the most widely applied principles in commercial ice machines. If a vessel containing water is connected with an air-pump, and a vacuum is produced causing it to evaporate rapidly, it grows cold. If the vapor of water evolved is collected in sulphuric acid so as to make the vacuum almost perfect, the water will freeze. This principle has been applied on a limited scale in practice. It is found advantageous to use more volatile liquids, such as ether, light petroleum hydrocarbons, or ammonia (NH_3), the latter either in strong aqueous solution or anhydrous Ammonia is very extensively used for the purpose There are many familiar instances of the application of this principle. If a glass bottle containing water be covered with a cloth kept constantly wet by application of water, the evaporation from the wet cloth will soon diminish the temperature of the contents of the bottle, and if the cloth were moistened with alcohol, or with ether, the cold would be proportionally greater, the degree of cold varying with the rapidity and extent of the evaporation. Wine-coolers, or water-coolers, made of porous earthenware, act in the same manner as the cloth. They are soaked in and saturated by water, which by its evaporation occasions cold. Coolers of this kind are common in most hot countries. On the ancient monuments of Egypt, a man is sometimes represented as fanning these vessels with a palm-leaf, to promote evaporation, and the Arabs in that country still practice this custom.

In some parts of India, where the dryness of the air allows considerable evaporation, ice is obtained in the following manner: 'Flat, shallow excavations, from one to two ft. deep, are loosely lined with rice-straw, or some similar bad conductor of heat, and upon the surface of this layer are placed shallow pans of porous earthenware, filled with water to the depth of one or two inches. Radiation (see HEAT) rapidly reduces the temperature below the freezing-point, and ice is formed in thin crusts, which are removed as fast as they are produced, and stowed away in suitable ice-houses.'—Miller's *Elements of Chemistry*, 2d ed., I., 226.

Generally the cooling liquid is kept apart from the objects cooled. Of this class of R. M., producing cold by evaporation of some volatile liquid, the ice-making machine of Carré & Co., of Paris, is one of the simplest and best (see figs. 1, 2). It consists of two strong cast-iron cylinders A and B, connected by a metal tube T, all perfectly gas-tight. The whole apparatus is made strong enough to stand seven or eight atmospheres of internal pressure.

The cylinder A is charged with an aqueous solution of ammoniacal gas. Ammonia is a powerful absorbent of heat, and is, moreover, so extremely soluble in water

that the water takes up nearly 700 times its volume of the gas. Air is completely expelled from the apparatus by opening a screw-valve and heating the cylinder. It is then ready for use. On applying heat to the cylinder A (fig. 1), which fits into a small stove for the purpose, the ammonia is volatilized from the solution in A. The heat reaches to about 220° F., and while it is being applied the volatilized ammonia condenses into a liquid under very high pressure, produced by its own atmosphere, in the cylinder B, which is immersed in cold water. The liquid thus collected in B consists of ammonia with about $\frac{1}{10}$ its weight of water. Most of the water remains in A. When the heating has gone on long enough—about half an hour for a small machine—the hot cylinder, A, is removed from the fire, and placed in a vessel of cold water, as shown in fig. 2. The cooling of this cylinder immediately causes the reabsorption, by the water in A, through the removal of the pressure,

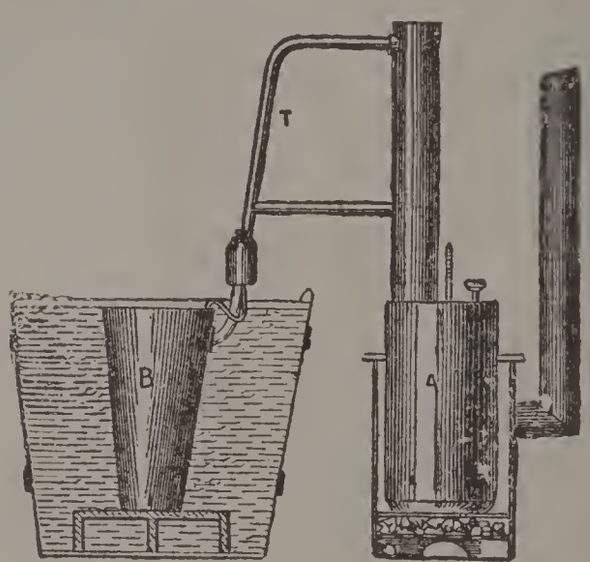


Fig. 1.

of the condensed ammonia from the other cylinder, B; and as it passes again from the liquid to the gaseous state, intense cold is produced, and, in consequence, heat abstracted from everything in contact with this portion of the apparatus.

The cold cylinder, B, is shown in section in fig. 2. It is so constructed that the ammonia is contained in an outer jacket, leaving a hollow space in the centre. When ice is to be made, the latter is filled with salt water, alcohol, or other liquid which does not freeze at 32° F., and into this is placed a loosely fitting metal cylinder D, containing the water to be frozen. In this way, with a small machine for domestic purposes, a few pounds of ice can be made in an hour or two; but large machines, on the same principle, are made which produce 800 lbs. of ice per hour.

There is a well-known refrigerating machine by D. Siebe, of London, in which ether is used as the volatile fluid, its evaporation being produced not by heat,

but by the action of an air-pump; the necessary cold is produced in the surrounding brine as the ether passes into vapor.

The apparatus invented by Pictet, of Geneva, has acquired very extensive use: it is an ice machine which works with anhydrous sulphurous acid instead of ether; but otherwise his process somewhat resembles Siebe's.

The liquid-agent freezing machines may be divided into absorption and compression machines. The Carré machine is an example of the first. In the compression machines no solvent is used. Compression alone liquefies the volatile liquid, and after cooling it is allowed to expand and is again liquefied by compression, thus completing the cycle. Anhydrous ammonia is sometimes used in this class of machine, and the Siebe and the Pictet machines above mentioned are in the same category.

The next type of machine is the atmospheric refriger-

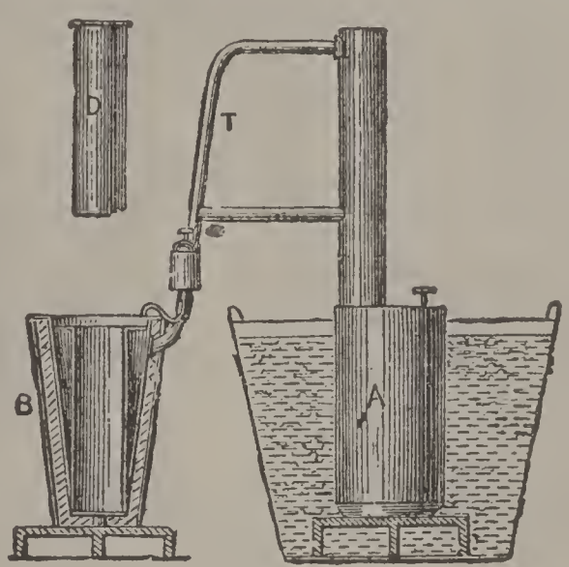


Fig. 2.

ator. This comprises a pump for compressing air. As work is done upon the air, it becomes hot. By water-spray or otherwise, it is cooled. If now permitted to expand against pressure, it becomes cool. In modern machines the air after compression is passed through a separator which withdraws the precipitated moisture. The cooling of the compressed air is effected in a multitubular condenser. The cooled air expands in an expansion cylinder, and in so doing helps to drive the compressing machinery—this cylinder having a piston and being connected to the crank of the motor engine. The air may be compressed to 2 or 3 atmospheres, and in the expansion cylinder is allowed to expand until atmospheric pressure is attained. The piston then returns and expels the cold air into any desired place, a refrigerating chamber, cold-air flues, etc. The expansion cylinder may be double-acting, so as to maintain an almost constant delivery of cold air. For making ice

the air is caused to pass through the freezing tank, while the water is introduced in spray, falling through the cold air and freezing into large blocks. Immense cakes of ice can thus be made. The cold air as it leaves the freezing chamber can be again compressed and used again, with an increase in economy.

The cold produced by R. M. is distributed frequently by brine pipes. These are pipes through which brine or calcium chloride solution is passed. The pipes include a cooling coil or other arrangement where their contents are refrigerated. The liquid is kept circulating in them, and their surfaces soon become coated with a thick covering of ice from the moisture in the air. Rows or coils of such pipes may be introduced into refrigerators and take the place of ice.

Breweries and slaughter-houses make extensive use of these machines. They are extending in application for making ice to be sold in competition with the natural product. Often distilled water is thus treated, to insure absolutely pure ice. They are very often placed on ocean steamers to preserve food, or to refrigerate meat in course of transportation from New Zealand, Australia, or other cattle-raising countries.

REFRIGERA'TION OF THE EARTH: decrease of the earth's temperature. That the earth is at present losing heat is an immediate consequence of the observed fact that the temperature of its crust *increases* as we descend; for, in any conducting body, the flux of heat is always from warmer to colder parts; and the rate at which heat is thus lost can be easily calculated if we know the conducting power (for heat) of the rocks forming the crust, and the rate at which the temperature increases with the depth under the surface; for the conductivity may be measured by the quantity of heat which, in unit of time, passes (per sq. ft. of surface) through a layer of rock of one ft. thickness, whose upper and lower surfaces are maintained at temperatures differing by 1° F. Hence, if k be the conductivity of the crust, and if the temperature increases by 1° F. every x ft. of descent, the quantity of heat lost, in unit of time, from each sq. ft. of surface, is measured by $\frac{k}{x}$. k and x can be determined by experiment for any particular locality, and thus the loss may be determined. These quantities vary very much in value in different localities: thus x is sometimes as great as 110, sometimes as small as 15. The value 50 is generally supposed to give a fair average—that is, for every 50 ft. of descent the temperature increases by 1° F.; hence the stifling heat in deep mines. At the depth of a mile, the temperature would on this estimate exceed that of the surface by more than 100° F. Beds of coal at such a depth could not be wrought, as the temperature would far exceed that of tropical climates.

Three methods of accounting for this increase of tem-

perature toward the interior of the earth have been proposed: 1. That the earth was originally molten, either throughout, or for a considerable depth over the whole surface; 2. That the internal heat is due to chemical combination; 3. That the earth, ages ago, passed through a region of space where the temperature was far above that of its present envelope.

Of the first hypothesis it is sufficient to say that such a state is the necessary consequence of impact, if the earth was formed by aggregation of cosmical masses due to their mutual gravitation. It is scarcely doubted now that this is the origin of solar and stellar heat; and the fact of the moon's turning always the same face to the earth (see ROTATION) is most easily explained on the hypothesis of her original fluidity. The figure of the earth (see EARTH) is also a strong argument in favor of this hypothesis. This explanation of the origin of the earth's internal heat is obviously consistent with the increase of temperature as we descend below the surface—for a spherical mass of molten rock will evidently soon cool externally, while its low conductivity (rendered still lower by the high temperature) will prevent the interior from supplying anything at all equivalent to the loss at the surface. On this hypothesis, the rate of loss of heat must constantly become smaller and smaller, but very slowly; and it is possible that considerable areas of the earth's mass may still be in a melted state. The doctrine, accepted a few years ago, that the earth is in a molten condition, except a comparatively thin external shell, has been measurably disproved by the calculations of Hopkins and others, which go to show that the mass of the earth is astronomically as rigid as cold iron.

The second hypothesis is perfectly sufficient to account for observed facts, but is apparently unnecessary, since the first has been shown to be, in the universe, a *vera causa*. It is alluded to here only because Lyell and other distinguished geologists have endeavored to show from it that the earth need not be losing heat on the whole—a result perfectly untenable. They suppose the internal heat to be generated by chemical combination, and then that the compounds so formed are again decomposed by electric currents produced by the heat (see THERMO-ELECTRICITY), and are thus prepared to combine again, and reproduce the heat. Were this the case, we should have a Perpetual Motion (q.v.); and, in the present state of science, this is known to be impossible.

The third hypothesis, proposed by Poisson, is easily shown inconsistent with known facts; for, if the passage through the warm region be supposed to have taken place 1,250 to 5,000 years ago, the temperature at the earth's surface must have been from 25° to 50° F. above the present mean temperature, which is inconsistent with history. If it took place 20,000 years ago, the mean temperature must have been 100° F. above the present temperature. Geology shows that this cannot

be accepted. And, if it be supposed to have taken place more than 20,000 years ago, the requisite temperature must have been incompatible with existence of animal or vegetable life.

From the above argument, from a paper by Sir William Thomson in *Transactions of the Royal Society of Edinburgh* (1862), it is obvious that the first hypothesis is that which we must, in the present state of our knowledge, adopt.

Supposing the temperature of melting rock to be 7,000° F. to 10,000° F. (and experiments seem to show that it is between these limits), the present temperature of the crust indicates that the earth became solid between 100,000,000 and 200,000,000 years ago. These estimates are based on the known laws of conduction of heat discovered by Fourier, and the conductivity of rocks and soils, deduced by Principal Forbes (q.v.) from observations in the neighborhood of Edinburgh. But as these observations refer to conductivity at very moderate temperatures only, and as Forbes has shown that conductivity is in general lowered by heating, the limit 100,000,000 years, above, may possibly be reduced to 20,000,000.

How little the internal heat of the earth has to do with surface temperature is indicated by the fact that Thomson has shown (*Proc. R. S. E.*, 1863–4) that if we accept the estimate of 1° F. of increase of temperature for 50 ft. of descent, the earth's surface is heated (by conduction of heat from within) only $\frac{1}{75}$ of a degree Fahrenheit.

REFT, v. *rĕft:* for BEREFT: see under REAVE.

REFUGE, n. *rĕf'ūj* [F. *refuge*—from L. *refugĭum*, an escape, a place of refuge—from *re*, back: *fugĕrĕ*, to flee: It. *rifugio*]: that which shelters or protects from danger or calamity; an asylum or retreat; a covert; a stronghold; resource. REF'UGELESS, a. *-lĕs*, without shelter or protection. REF'UGEE', n. *-ū-jē'* [F. *réfugié*]: one who seeks safety or shelter in another country from persecution in his own (see below). CITIES OF REFUGE, among the *anc. Jews*, six cities in different parts of Palestine appointed for the retreat and safety of those who killed a person without design.—SYN. of 'refuge': shelter; covert; retreat; asylum; protection; stronghold; sanctuary.

REFUGEE': person who has fled from religious or political persecution in his own country, and taken refuge in another. The term was applied first to those Protestants who found an asylum in Britain and elsewhere at two different periods; first during the Flemish persecutions under the Duke of Alva 1567; afterward 1685, when Louis XIV. of France revoked the Edict of Nantes. Of the numerous French artisans who settled in England on this last occasion, the most part Anglicized their names, as by substituting Young for 'Le Jeune,' Taylor for 'Tellier,' etc., so that their posterity can now hardly be recognized as of foreign origin. According to Lower (*Patronymica Britannica*) De Preux became Deprose, and 'Richard Despair, a poor man,' buried at East Grimstead, was, in the orthography of his forefathers, Despard. There were also refugee families of higher class, some of whose descendants and representatives came to occupy a place in the peerage. The first French revolution brought numerous political refugees to England; and Great Britain and the United States are noted for affording ready asylum to refugees political and religious.—Weiss's *History of the French Prot. Refugees, from the Revocation of the Edict of Nantes to the Present Time*, translated by Hardman (London 1854); J. S. Burn's *History of the French, Walloon, Dutch, and other Foreign Prot. Refugees settled in England from the Reign of Henry VIII. to the Revocation of the Edict of Nantes.*

REFULGENT, a. *rĕ-fŭl'jĕnt* [L. *refulgens* or *refulgentem*, reflecting a shining light—from *re*, back; *fulgĕō*, I shine: It. *rifulgente:* Sp. *refulgente*]: reflecting a shining light; casting a bright light; splendid; brilliant; shining. REFUL'GENTLY, ad. *-lĭ*. REFUL'GENCE, n. *-jĕns*, or REFUL'GENCY, n. *-jĕn-sĭ*, a flood of light; splendor.

REFUND, v. *rĕ-fŭnd'* [L. *refundĕrĕ*, to restore, to pour back—from *re*, back; *fundo*, I pour: F. *refunder*, to refund, to restore]: to repay; to return, as money in compensation; to restore. REFUND'ER, n. *-ĕr*, one who refunds; in *politics*, one who favors refunding a public debt, or is a member of a party or faction that favors refunding. REFUND'ING, imp. REFUND'ED, pp

REFURBISH, v. *rē-fėr'bĭsh* [*re*, again, and *furbish*]: to furbish a second time.

REFURNISH, v. *rē-fėr'nĭsh* [*re*, again, and *furnish*]: to supply or provide anew.

REFUSE, v. *rĕ-fūz'* [F. *refuser*, to refuse—perhaps from L. *refūtārĕ*, to drive back, hence, to refuse; more probably from L. *refundĕrĕ*, to pour back—*refūtārĕ* and *refundĕrĕ* are both derived from L. *re*, back; *fundĕrĕ*, to pour: It. *rifusare;* Port. *refusar*, to refuse]: to deny, as a request, an invitation, or a demand; to decline to do or accept; to reject. REFU'SING, imp. REFUSED, pp. *rĕ-fūzd'*. REFU'SAL, n. *-zăl*, act of refusing; the denial of anything solicited or offered for acceptance; choice of taking or refusing; option. REFU'SER, n. *-zėr*, one who refuses. REFU'SABLE, a. *-ză-bl*, that may be rejected.—SYN. of 'refuse': to decline; deny; reject; repel; rebuff.

REFUSE, n. *rĕf'ūs* [L. *refūsus*, poured back, rejected—from *re*, back; *fundĕrĕ*, to pour: F. *refus*, refusal, the thing refused]: that which is refused or rejected as useless or worthless; waste matter: ADJ. rejected; worthless; of no value.—SYN. of 'refuse, n.': sediment; dross; trash; dregs; scum; excrement; waste.

REFUTE, v. *rĕ-fūt'* [F. *réfuter*—from L. *refūtārĕ*, to refute, to repel: It. *rifutare*]: to overthrow or repel by argument or evidence; to prove to be false or erroneous; to disprove. REFU'TING, imp. REFU'TED, pp. REFU'TER, n. *-tėr*, one who refutes. REFU'TABLE, a. *-tă-bl*, that may be proved false or erroneous. REFU'TABLY, ad. *-blĭ*. REFU'TABIL'ITY, n. *-tă-bĭl'ĭ-tĭ*. REFUTATION, n. *rĕf'ū-tā'shŭn* [F.—L.]: the act of proving to be false or erroneous. REFUTATORY, a. *rĕ-fū'tă-tėr-ĭ*, tending to refute.

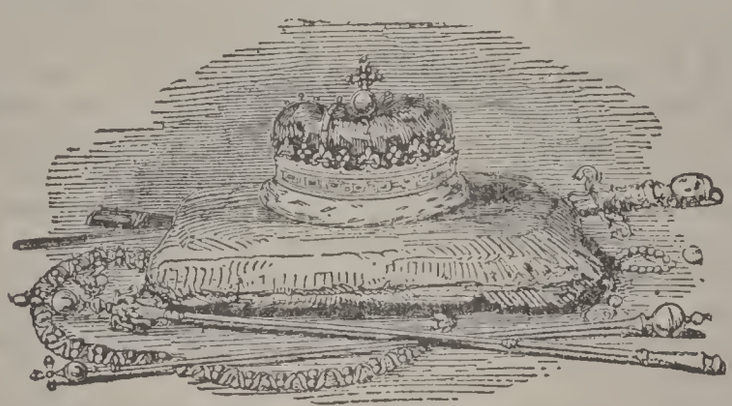
REGAIN, v. *rĕ-gān'* [*re*, back, and *gain:* F. *regagner*, to win back]: to recover; to repossess. REGAIN'ING, imp. REGAINED, pp. *rĕ-gānd'*.—SYN. of 'regain': to repossess; reobtain; recover; retrieve.

REGAL, a. *rē'găl* [L. *rēgālis*, kingly—from *rex* or *rēgem*, a king: It. *regale*]: pertaining to a king; kingly; royal. RE'GALLY, ad. *-lĭ*. REGALIA, n. plu. *rĕ-gā'lĭ-a* [L. plu. neut. of *rēgālis*, kingly]: ensigns and insignia of royalty (see below): the decorations or insignia of an office or order, as of Freemasons. REGA'LIAN, a. *-lĭ-ăn*, belonging to a king; sovereign. REGALITY, n. *rĕ-găl'ĭ-tĭ*, sovereignty; royalty: in *Scot.*, formerly a territorial jurisdiction originally conferred by the king, nearly akin to a Palatinate (q.v.) in England. Lands were conferred by the king on some powerful noble, a *Lord of Regality*, to control as he best might with the strong hand, and in the exercise of the highest prerogatives of the crown—often having a complete court of his own, in imitation of royalty. Jurisdictions of R. were abolished in the reign of George II. REGALIA OF THE CHURCH, the privileges which have been granted to the Church of England by the sovereign; the patrimony of the church.

REGALBUTO, *rā-gâl-bô'tō*, or RAGALBUTO, *râ-gâl-bô'tō:* Italian city in the island of Sicily, province of Catania. 30 m. w.n.w. of the city of Catania. It is beautifully situated on a hill near the right bank of the river Salso, with Mt. Etna bounding the prospect on the n.e. Its cathedral is an object of interest. Pop. 9,000.

REGALE, v. *rĕ-gāl'* [F. *régaler*, to treat: Sp. *regalar*, to make good cheer, to entertain: It. *gala*, good cheer: OF. *galer*, to entertain with sport and glee]: to entertain with something that delights the senses in any way; to gratify; to feast or to fare sumptuously. REGAL'ING, imp. REGALED, pp. *rĕ-gāld'*. REGAL'ER, n. *-ėr*, one who regales. REGALEMENT, n. *rĕ-gāl'mĕnt*, refreshment; entertainment.

REGA'LIA: the ensigns of royalty, particularly the apparatus of a coronation. The R. of England were, prior to the Reformation, in the keeping of the monks of Westminster Abbey, and they are still presented to the sovereign at the coronation by the dean and prebendaries of that church. During the civil war, the crown and most of the regalia fell victims to Puritan zeal; and on the restoration of the royal family, new ensigns had to be made for the coronation of Charles II., which, with occasional alteration and repairs, have continued in use to the present day. The R., strictly so called, consist of the crown, the sceptre with the cross, the verge or rod with



Regalia of Scotland.

the dove, the so-called staff of Edward the Confessor (made in reality for Charles II.), the blunt sword of mercy called Curtana, the two sharp swords of justice, spiritual and temporal, the ampulla or receptacle for the coronation oil, the anointing spoon (probably the only existing relic of the old R.), the armillæ or bracelets, the spurs of chivalry, and various royal vestments. All these, except the vestments, are now exhibited in the Jewel-room in the Tower of London, in which are also a smaller crown, sceptre, and orb for the coronation of a queen consort, two other queen-consorts' sceptres—one of ivory, made for Marie d'Este; and the state-crown of silver and diamonds, used at the coronation of Queen Victoria, containing a large ruby and sapphire, the former said to have been worn by Edward the Black Prince. The Prince of Wales's crown of gold, without stones, is modern.

The proper R. of Scotland consist of the crown, the sceptre, and the sword of state. The crown probably belongs to the time of Robert Bruce, and is adorned with crosses and fleurs de lis alternately. The sceptre is of the time of James V.; the sword was a present from Pope Julius II. to James IV. 1507. During the civil war, the R. were removed by the Earl Marischal for safe custody from the Crown-room of Edinburgh Castle, their usual place of deposit. From the Restoration to the Union, the regalia continued to be kept in the Crown-room as formerly. From the time of the consummation of the treaty of Union till 1818, the R. remained locked in a chest in the Crown-room, away from public gaze, and it came to be the general belief that they had been secretly conveyed away to London, an idea confirmed by the keeper of the Jewel-office in the Tower showing a crown alleged to be that of Scotland. In 1818, by warrant under the sign-manual of George IV., then prince-regent, the chest in the Crown-room was broken open, and the crown, sword, and sceptre were found as they had been deposited at the Union; and they are now exhibited in the Crown-room of Edinburgh Castle, with other ancient royal relics of jewels and gold.

REGALIA, *rĕ-gā′lĭ-a* (or REGALE, *rē-gā′lē*), RIGHT OF: right in ecclesiastical things, claimed by sovereigns in virtue of the royal prerogative, which has frequently been the subject of angry controversy between kings and popes. It involved several points as to presentation to benefices; but the most serious conflicts arose out of the abusive claim by the crown to the revenues of vacant benefices, especially bishoprics, and the co-ordinate claim to keep the benefice or the see vacant for an indefinite period, in order to appropriate its revenue: see INVESTITURE. Most memorable of these conflicts was that of Innocent XI. (q.v.) and his successor with Louis XIV.—Louis XIV. having gone so far as to seize the papal territory of Avignon in reprisal.

RE′GALS [perhaps from *rigabello,* instrument used prior to the organ in the churches of Italy]: small portable finger organ in use in the 16th and 17th c., and perhaps earlier.

Regal.

REGARD, v. *rĕ-gârd′* [F. *regarder;* It. *riguardare,* to look upon, to see (see GUARD)]: to notice with particular attention; to look toward; to observe; to remark; to attend to with respect; to fix the mind on, as a matter of importance; to pay attention to; to respect; to esteem: N. attention of mind from a feeling of interest; attention as a matter of importance; notice; heed; respect; esteem; relation; reference; look; view; aspect directed to another; in *OE.,* prospect; object of sight. REGARD′ING, imp. REGARD′ED, pp. REGARD′ER, n. *-er,* one who regards;

in *law*, an officer whose business was to inspect the forests, the inferior officers, etc. REGARD'ANT, a. *-ănt* [F.]: in *her.*, looking behind or with head turned backward (see PASSANT: RAMPANT): in *feudal law*, annexed to the manor or land. REGARD'FUL, a. *-fûl*, attentive; taking notice. REGARD'FULLY, ad. *-lĭ*. REGARD'LESS, a. *-lĕs*, unobservant; heedless; inattentive. REGARD'LESSLY, ad. *-lĭ*, without heed. REGARD'LESSNESS, n. *-nĕs*, the state or quality of being regardless; heedlessness. REGARDS', n. plu. *-gârdz'*, respects; good wishes.—SYN. of 'regard, v.': to attend to; value; estimate; remark; observe; consider; respect; heed; mind; esteem;—of 'regard, n.': attention; reverence; respect; note, eminence; account; esteem; relation; reference; look; aspect; consideration; notice; observance; heed; care; concern; estimation, attachment;—of 'regardless': careless; indifferent; inattentive; unobservant; neglectful; negligent; unconcerned.

REGATHER, v. *rē-găth'ĕr* [*re*, again, and *gather*]: to collect a second time.

REGATTA, n. *rĕ-găt'tă* [It. *regatta*, annual boat-race of gondoliers at Venice: O.It. *rigattare*, to strive for the victory: Sp. *regatear*, to rival in sailing: F. *régate*]: sailing or rowing match in which a number of boats and yachts contend for prizes. REGAT'TAS, n. *-tăz*, a thick, strong cotton fabric, having narrow stripes of white and dark blue.

REGEAL, v. *rē-jēl'* [L. *re*, again; *gĕlu*, frost]: to freeze again. REGEAL'ING, imp. REGEALED, *rē-jēld'*. REGELATION, n. *rĕj'ĕl-ā'shŭn*, the act of freezing again (see below).

REGELA'TION: ill-chosen term for a somewhat obscure phenomenon, inasmuch as it implies a previous state which may not have existed. The term however has come into general use. The principal fact to be explained is the adhesion of two pieces of ice brought into contact, not merely in air, but even when both are immersed in water at such temperatures as 100° F. Several explanations have been proposed, of which specially notable are those of Faraday, Forbes, and J. Thomson.

Faraday's idea seemed to be that in liquid and solid bodies the proximity of particles in a particular state tends to produce the same state in other particles; and thus, that a film of water between two plates of ice tends to assume the solid state. There are many singular phenomena in physical science apparently explicable by this suggestion; yet this 'explanation' seems merely to *shift* the difficulty, without overcoming it.

Forbes starts with the assumption that ice is essentially colder than water, therefore that there is constantly a transfer of heat from water to ice which is in contact with it; the effect being to cover the surface of the ice with a film of half-melted ice or half-frozen water. Such a film, between two slabs of ice, would part with heat to both, and would freeze without melting the adjacent ice. This explanation would be satisfactory if the postulate could be granted, but it is deemed improbable that there is any

such essential difference of temperature between solid and liquid water,

The explanation proposed by Prof. J. Thomson is undoubtedly founded on a *vera causa*, and certainly accounts for at least a part of the phenomena; yet there may be hesitation in allowing that the cause is adequate to the observed effect in every case. Prof. Thomson's explanation is founded on his beautiful theoretical discovery that *the freezing-point of water is lowered by pressure*, which was experimentally verified by W. Thomson. Hence, if two slabs of ice be presssed together, at the points of greatest pressure the ice will be melted; its latent heat of fusion must be drawn from surrounding bodies, and thus cold is produced which will freeze part of the film of water between the two slabs. The points of greatest pressure will thus be shifted, and the process of melting and regelation may go on indefinitely. Objections to this explanation were advanced by Faraday and Forbes, who showed that slabs of ice freeze together when suspended vertically with the view of avoiding pressure between them. But J, Thomson shows that the capillary forces of the film of water which must (in these cases) be between the slabs (for without directly applied pressure the effect cannot be obtained with slabs of *dry* ice), are sufficient to produce the pressure requisite for his mode of explanation. While this part of the subject cannot be said to be completely cleared up, the theory of J. Thomson has been applied with perfect success in explanation of the extraordinary phenomena observed in Glaciers (q.v.), where enormous forces are constantly at work. It evidently at once accounts for the result of observation, due to Rendu and Forbes, that a glacier moves like a viscous fluid: in fact, it shows why and how the mass gives way to pressure, and how it is refrozen in a new form, which in turn gives way to the new distribution of pressure. The explanation of the veined structure, the formation of clear ice from snow, etc., all are easily deduced from it.

The phenomena of R. are easily seen in the making of snow-balls, which is known to be impossible, by the hands at least, when the snow has been exposed to great cold, and is therefore dry. But, even in this case, the effect is easily obtained by application of pressure sufficient to melt the ice, as is seen in wheel-tracks, etc. By means of a Bramah's press, it is easy to convert a snowball into a sphere of clear ice.

REGENCY: see under REGENT.

REGENERATE, v. *rĕ-jĕn'ĕr-āt* [L. *regen'ĕrātus*, reproduced—from *re*, again; *genĕrārĕ*, to beget—from *genus*, origin: It. *regenerare:* F. *régénérer*]: to produce anew; to form into a new and better state; to change the heart from evil to good; to cause to be spiritually born: ADJ. reproduced; born again; changed in heart. REGEN'ERATING, imp. REGEN'ERATED, pp.: ADJ. renewed, as by grace; born again. REGEN'ERATENESS, n. *-nĕs*, the state of being regenerated. REGEN'ERA'TION, n. *-ā'shŭn* [F.—L]: by some understood as the change of nature produced in the heart of man through the working of the Holy Spirit, significantly called 'a being born again' (see below): in *physiol.*, renewal of a portion of lost or removed tissue. REGENERATIVE, a. *-ā-tĭv*, pertaining to regeneration. REGEN'ERA'TOR, n. *-ā'tĕr*, one who regenerates. REGENERATOR FURNACE (see GLASS). REGEN'ERA'TORY, a. *-ā'tĕr-ĭ*, tending to reproduce or renovate. *Note.*—REGENERATION in modern times is loosely applied to 'conversion'; but in the Book of Common Prayer, and in OE., it simply denotes 'the new birth, or entrance into a state of grace.'

REGENERA'TION: theological term denoting the spiritual change which passes on all men who become Christian disciples. There are various interpretations of the mode and meaning of this change, but its necessity in one form or another may be said to be admitted by all branches of the Christian Church. By all, man is supposed, as the condition of his becoming truly Christian, to pass from a state of nature to the regenerate state; from a state in which he obeys the mere impulses of the natural life to a state in which a new and higher—a divine—life has been awakened in him. The words of Christ to Nicodemus: 'Verily, verily, I say unto thee, except a man be born again, he cannot see the kingdom of God,' are accepted by the Christian Church as the expression of this universal necessity. Further, every branch of the general church recognizes, though under very different conditions, the Holy Spirit as the author of this change. The change, in its real character, is spiritual, and spiritually induced. According to certain sections of the Christian Church, however, the change is inseparably involved with Christian baptism in all cases; while other sections do not acknowledge any essential connection between baptism and regeneration. In the view of the former, baptism constitutes always a real point of transition from the natural to the spiritual life. The grace of baptism is the grace of R.; the laver of baptism is the laver of R., not merely in any formal sense, but in a real and living sense; so that every baptized person—at least every rightly baptized person—has already become a Christian truly, though he may fall away from the grace that he has received. This is what is commonly called the High Church doctrine of R.; but its strong statements evidently admit different shades of meaning in different minds, and are not to be regarded as necessarily signifying—though they may permit—the belief that baptism is itself a spiritual regeneration, nor the

belief that baptism itself works such regeneration. In the view of others, R. is a special, conscious process, which takes place independently of baptism, or of any other outward fact or ceremony. It implies a sensible experience—an awakening whereby men come to see the evil of their sin, and the divine displeasure against sin, and, through the Holy Spirit, are born again, put away their former evil life, and begin to live a new divine life; and many Christians have spoken with rapture of this *experience*, of its thoroughness, its suddenness, its immediateness. There are different shades of opinion on the subject; some (certainly without warrant from Scripture or from the known laws of mental operation) holding it as a condition of R. that the regenerate should be able to recount, or at least give some precise idea of the time and manner of the change through which they have passed; others repudiating such views as savoring of fanaticism, yet holding no less to the spiritual definiteness of the change, independently of church forms of any kind: and such views, in contradistinction to the High Church doctrine, have received the quite inapplicable name Evangelical.—From the above outline, it is evident that some modern theology has used the term R. loosely as the same with conversion. Though the two may practically blend, R. strictly denotes the act of God in conversion, while conversion denotes the act of man under regeneration.

REGENSBURG, *rā'ghĕns-bûrch*, or RATISBON, *rât'is-bon* (Lat. *Reginum Radespona*): city, capital of a Bavarian province; on the right bank of the Danube, 65 m. n.n.e. of Munich. R., formerly a free city of the empire and seat of the diet, is in a broad and fruitful valley, 1,000 ft. above sea-level. It presents a distinctly mediæval aspect, with its ancient ramparts, fosses, and gates, and its narrow crooked streets with their high, many-cornered, gabled houses; while it retains many interesting monuments of its importance and wealth during the middle ages. Among its 13 Rom. Cath. churches, the most remarkable is the cathedral, begun 1275, and not completed till the middle of the 17th c., which ranks, since its restoration 1830–38, as one of the noblest specimens of German architecture, and is especially noteworthy for the fine monuments of its former bishops, and for its silver altar and numerous painted-glass windows, restored 1830. The Scottish Church of St. James (secularized 1862) dates from the 12th c., and is the pure Byzantine style. There are several monasteries, and three Prot. churches. The old town-hall was used for a century and a half as the place of meeting for the imperial diet. The royal library contains 60,000 vols. The city has several highly ornamental fountains, and contains a monument to Kepler, the astronomer, who died in R. A stone bridge connects R. with the busy trading suburb Stadt am Hof. The manufactures of R. include gold, silver, brass, and steel wares, paper, earthenware, beet-root sugar, brandy, and superior candles and soap. Since 1853 it has been a free port; and in addition to ship-building actively carried on, the trading community is

engaged in transport of corn, wood, and salt. R., as the principal seat of the Danube Steam-navigation Company, is a busy trading port.

R., which ranks as one of the most ancient cities of Germany, and was built by the Romans, by whom it was named *Reginum*, was a place of commercial importance in the early ages of Christianity. In 750, a bishopric was founded here, comprising a large portion of Bavaria and the Upper Palatinate. Under Emperor Frederick I., it was relieved from its subjection to the dukes of Bavaria, and declared a free city. During the middle ages it was the chief seat of the Indo-Levantine trade, and one of the wealthiest and most populous cities of s. Germany. From 1663 to the dissolution of the German empire 1806, R. was, with a very short interregnum, the seat of the German diet; and after various changes of fortune during the period of Napoleon's power, was finally ceded to Bavaria, of which it has since formed an integral part. Pop. (1880) 34,516; (1890) 37,365; (1900) 45,429.

REGENT, n. *rē'jĕnt* [F. *régent*—from L. *regens* or *regen'tem*, ruling, governing—from *rego*, I rule: It. *reggente;* Sp. *regente*, a regent]: one who governs during the absence, incapacity, or minority of a sovereign (see below): a governor: ADJ. exercising vicarious authority. RE'GENTSHIP, n. the office or dignity of a regent. REGENCY, n. *rē'jĕn-sĭ*, the office or jurisdiction of a regent; the collective body intrusted with vicarious government; the district governed by a vicegerent.

RE'GENT: one who exercises the power without having the name of a king. In a hereditary monarchy, various circumstances may necessitate the delegation of the sovereign power—e.g., devolution of the crown on a minor too young to be intrusted with the kingly office; incapacity of the sovereign by illness, mental or bodily; and absence of the sovereign from his realm. A R. under the title Protector (q.v.) has often been appointed to exercise royal authority in the sovereign's minority, the latest instance in England being during the minority of Edward VI.; and regents and councils of regency have been sometimes named by the sovereign to provide for the probable nonage of his heir. In 1788, when George III. became incapacitated by insanity, the chief political authorities were divided on the question whether his eldest son then of full age had a right to be R., or whether the nomination rested with parliament: the king's recovery ended the discussion. On the return of the malady, the regency was conferred on the Prince of Wales by parliament. During Queen Victoria's various short absences from the country, there has been no delegation of the royal power.

REGENT OF A UNIVERSITY: term variously applied.—In the Univ. of Paris, where this as well as other learned distinctions originated, every master of arts had the privilege, and the duty, of delivering public lectures. The same was the case at first in the universities of Oxford and Cambridge. About the middle of the 13th c. the title Master became a degree attainable by any one on certain conditions of residence and proficiency; and the duty of lecturing was confined to a limited number of graduates, called *Regents*, who were eventually succeeded in the office of lecturing by the established professors. In the English universities a master of arts became a regent after a short period, and is supposed to read lectures during the year of his regency. The regents still form the governing body in the Convocation and Congregation at Oxford, and in the Senate of Cambridge. In Scottish universities, according to their early constitution, the regents were the lecturers.

In the United States in some universities a regent is practically the same as president, though in theory acting vicariously for some governing body; in some others, regent denotes a member of a governing board.

REGERMINATE, v. *rē-jėr'mĭ-nāt* [*re*, again, and *germinate*]: to germinate anew. REGER'MINA'TION, n. act of sprouting or germinating again.

REGGELLO, *rĕd-jĕl'lō:* small town of Italy, province of Florence, 16 m. e.s.e. of the city of Florence. It is surrounded by beautiful hills, which produce wines, fruits, and grain in abundance. Pop. 10,700.

REGGIO, or REGGIO DI CALABRIA, *rĕd'jō dē kâ-lâ'brē-â* (anc. *Rhegium Julii*): seaport in s. Italy, chief city of the province of Reggio (formerly Calabria Ultra I.); on the shore of the Strait of Messina, 10 m. s.e. of the city of Messina in Sicily. It is well built; its streets are wide and regular, and it is surrounded by a wall flanked by towers. A fine cathedral, a hospital, and several educational institutions are the principal buildings. There are manufactures of linens, stockings, silks, and odoriferous waters. The fisheries of the vicinity are profitable, and abound in the Pinna (q.v.), a mollusk, whose very delicate skin is made into gloves, stockings, and caps of great value. The climate of Reggio is salubrious, and the scenery of the vicinity exceedingly beautiful; the soil is rich, and produces fruit-bearing plants, of the temperate and tropical zones, in great variety. Behind the city rises Aspromonte, a mountain of the Apennines, where Garibaldi was taken prisoner in 1862. Pop. (1901), town and suburbs, 44,417; province (1901) 430,079.

The town was destroyed by an earthquake in 1783, and again on the morning of Dec. 28, 1908, when an immense area in Calabria and Sicily was devastated with a loss of life approximating 250,000. In Reggio, fully two-thirds of the population was killed, and the city's treasures of painting and architecture perished.

REGGIO, or Reggio Nell' Emilia, *rĕd'jō nĕl lā-mē'lē-â:* city of central Italy, formerly belonging to the duchy of Modena, now included in the province of Modena; on the ancient *Via Emilia,* 16 m. w.n.w. of the city of Modena. R. is on a fertile plain on the right bank of the Crostolo; is surrounded by a wall; contains beautiful palaces, and a fine cathedral of the 15th c. and other churches, which possess famous paintings, the *Teatro Nuovo,* one of the finest theatres in Italy; the lunatic asylum; a museum, an acad., and many other institutions. It is a rich city; and has manufactures of cotton, of cloth, and of other stuffs. Pop. (1881) 18,634; (1901) 58,490.

REGIAM MAJESTATEM, *rē'jĭ-ăm măj-ĕs-tā'tĕm:* ancient collection of laws compiled (as it asserts) by order of David I., King of Scotland. Its authenticity has been controverted; the prevalent opinion being that it is a compilation from the English work of Glanville, called the *Regiam Potestatem,* and that the publication of the book was an artifice of Edward I. to further his design of assimilating the Scotch law to that of England.

REGICIDE, n. *rĕj'ĭ-sīd* [F. *régicide;* It. *regicida,* a regicide—from L. *rex* or *rēgem,* a king; *cædo,* I kill]: one who murders a king or sovereign; the murder of a king. Reg'ici'dal, a. *-sī'dăl,* pertaining to a regicide, or to regicide.

REGILD, v. *rē-gĭld'* [*re,* again, and *gild*]: to gild anew.

REGILLUS, *rē-jĭl'lŭs,* Lake: anciently a small lake of Latium, s.e. of Rome, probably in the extinct volcanic crater of Cornufelle, near the modern Frascati, which was drained in the 17th c. Lake R. is celebrated in the semi-legendary history of Rome as the scene B.C. 496 of a great battle between the Romans, under Aulus Postumius, and the Latins on behalf of the banished Tarquin, under O. Manilius. The latter were entirely defeated.

REGIME, n. *rā-zhēm'* [F. *régime*—from L. *regĭmen,* a governing]: mode of living; form of government; rule; administration.

REGIMEN, n. *rĕj'ĭ-mĕn* [L. *regĭmen,* direction—from *rego,* I rule: F. *régime*]: in *med.,* regulation of diet and habit; régime; in *gram.,* the regulation of one word by another; the words regulated.

REGIMENT, n. *rĕj'ĭ-mĕnt* [F. *régiment*—from mid. L. *regimen'tum:* L. *regĭmen,* a guiding or directing—from *rego,* I rule: It. *reggimento,* a regiment]: body of soldiers, consisting of a number of companies if infantry, and of squadrons if cavalry, under command of an officer called a colonel (see below): V. to form into regiments. Regimental, a. *rĕj'ĭ-mĕnt'ăl,* of or relating to a regt. Reg'iment'als, n. plu. *-ălz,* all the articles of military dress. Regimental color, the left-hand color of the pair of colors of an infantry regt. Regimental schools, schools maintained by govt. for soldiers of a regiment, and their older children.

REGIMENT: in all modern armies, a body of soldiers under a colonel's command, and the largest *permanent* association of soldiers. Regiments may be combined into brigades, brigades into divisions, and divisions into armies; but these combinations are temporary, while in the R. the same officers serve continually, and in command of the same body of men. The strength of a R. may vary greatly even in the same army, as each may comprise any number of battalions.

The regimental system could exist only where standing armies are maintained. Accordingly, the Macedonian syntagmata and the Roman cohorts were evidently regiments in a strict sense. During the middle ages, feudal organization precluded the system, and its first reappearance was in France. Francis I. formed legions of 6,000 men each, which were divided into independent companies, the latter being, in fact, battalions, and each legion a regiment. The word R. began to be applied to bodies of British troops in Elizabeth's reign; regiments are spoken of at the time of the Armada 1588, and as composing the force in Ireland 1598. From that time forward, the army and militia of Britain have been organized into regiments. The 110 regiments of the line have recently been reorganized as 71 regiments of linked battalions (see WAR SERVICES). Each is nominally commanded by a col., who is an old general officer, and whose office is merely a sinecure. The real command rests with the lieut.-col. in each battalion, who is assisted by a major, and has for a staff an adjutant, a quartermaster, a paymaster, and a surgeon. The R. or battalion is divided into companies in infantry, engineers, and army service corps; into troops in the cavalry. The artillery is divided into 30 brigades, each of which is as large as an ordinary R. The brigade is sub-divided into batteries, which are the working units. The working officers are capt. and 2 lieuts. to each infantry company or cavalry troop; major, capt., three lieuts. per battery of artillery. See UNIFORM.

The U. S. army 1902 was classified as follows: inf., cav., artil., and miscellaneous, the latter comprising the engineer battalion, ordnance dept., signal service, hospital service, Indian scouts, the force at the Milit. Acad., recruiting service, etc. The inf. arm had 30 regiments, 1,500 officers, 25,345 enlisted men (24,845); the cav., 15 regiments, 750 officers, 12,620 men (13,370); the artil., 126 companies, 651 officers, and 17,742 men (18,393); the miscel. service, 131 officers, 9,703 men (9,834), a tl. of 3,820 officers and 59,866 men (63,686). In the distribution of the army in time of peace it is seldom that more than 5 companies of any arm are stationed at one place. In an emergency in which state troops cannot be called out or are insufficient, there may be a swift mobilization of many companies. An inf. R. comprises about 500 men in peace and 1,000 in war; a cav., 12 troops of 63 officers and men: and an artil., 12 batteries of 68 officers and men again, an inf. R. has 10 companies; a cav., 12; and an artil. 12. Every R. has a col. and a lieut.col.; an inf. R. has

one major, and a cavalry and artillery regiment 3 majors each. Parts of all the regiments were distributed among 8 military departments, 88 posts, and 22 armories, arsenals, and rendezvous.

REGINA, Canada: the seat of government in the Northwest Territories for 23 years, and since 1905, Sept. 1, the capital of the new province of Saskatchewan.

Railways and Location.—The main line of the Canadian Pacific railway bisects the city, which is also the southern terminus of the Regina and Prince Albert branch of the Canadian Northern railway. It is the western terminus of the Arcola extension of the Canadian Pacific railway. The Canadian Northern railway will soon enter the city from the southeast and the Grand Trunk Pacific will tap the district of which it is the center by a branch leaving the main line at or near Yorkton.

Industries.—The land in the immediate vicinity of Regina produces the finest wheat, and for vegetables and garden produce the Regina district cannot be surpassed anywhere in the world. Not only is the quality good, but the yield is great. According to the official bulletin of the government the average yield per acre of spring wheat in the Regina district during the last nine years was 22.27 bushels.

The elevator capacity is ample, there being 50 elevators with a capacity of 1,500,000 bushels in the immediate locality, and a flour mill in the city. Among the industries in Regina are grain separators and picklers, plows, engines and threshers, harvesters and other agricultural implements, office and bank fixtures, sash and doors and builders' materials, pressed brick and artificial stone, pork-packing, cement blocks, soda and other aerated waters, flour mills, foundry and machine works, planing mills and furniture.

Financial and Commercial Progress.—Regina's period of real progress began in 1903. Its assessment in that year was $1,226,000; in 1905 it was $3,981,413; in 1906, $6,448,092. On Dec. 31, 1906, its surplus assets over liabilities were $546,993. In 1904-5 the duties paid at the Regina custom house were $106,636. The postoffice revenue in 1901 was $9,607; in 1904, $27,260, and in 1906, $37,510. The value of the money orders purchased rose in the same years from $18,446 to $99,884; of money orders paid from $33,223 to $234,801; the value of postal notes paid from $6,445 to $44,736. There are eight chartered banks.

Institutions and Government.—There are six schools in the city as well as a high school and the provincial normal school. The Church of England, the Roman Catholic, the Presbyterian, the Methodist, the Baptist, the Lutheran and Greek churches, and the Salvation Army, have each places of worship. The city has also a splendid hospital and eight hotels. The headquarters of the Royal Northwest Mounted Police are located at Regina, the

extensive offices and buildings forming a good-sized village of themselves. The provincial government is about to commence the construction of a block of buildings for the use of the legislative assembly and officers of the local government, estimated to cost $1,000,000.

The municipal government is entrusted to an elected council consisting of mayor and aldermen. The city owns the electric light service, an excellent gravitation water works system and the drainage and sewerage system.

History and Population.—Regina was started as a prairie village, or settlement, and grew for some years rather slowly. In 1882 it was a village of tents; in 1901 its population was only 2,645; in 1907 the population was estimated at 9,000.

REGIOMONTANUS, *rē-jĭ-ō-mŏn-tā'nŭs:* name adopted by an early German mathematician originally named Johann Müller—but who called himself at first John de Monteregio, and afterward Regiomontanus, probably because he was a native of Königsberg. Having received a classical education at Leipsic he placed himself under Purbachius (Georg von Purbach), the professor of mathematics at Vienna, and under him became one of the first astronomers of that age. With Purbachius he accompanied Cardinal Bessarion to Rome in 1461, where Beza gave him further instruction in Greek literature, and he now completed a new abridgement in Latin of the *Almagest* of Ptolemy (1496), correcting many errors in the former translation, made by George of Trebizond. In 1471 he built an observatory at Nuremberg and established a press; but after three years returned to Rome on the invitation of Sixtus IV., who employed him in the reformation of the calendar, and rewarded his services by raising him to the bishopric of Ratisbon (1475). He died, according to some, of the plague, according to others by poison administered by the son of George of Trebizond, out of revenge for his having exposed the errors of his father. Regiomontanus was the first in Germany to apply himself to the cultivation of the neglected science of algebra. He made great improvements in trigonometry, into which he introduced the use of tangents. His refutation of a supposed discovery of the quadrature of the circle, and numerous writings on various subjects of natural philosophy, display extensive learning and great acuteness. His astronomical observations from 1475 to 1506 (*Ephemerides*) are very accurate. Among his other works are *Kalendarium* (about 1473); *De Triangulis Omnimodis* (1533); *Tabulæ Directionum Prejectionumque in Nativitatibus multum utiles* (1585).

REGION, n. *rē'jŭn* [F. *région;* L. *regĭōnem,* a boundary-line, a territory—from *rego,* I rule: It. *regione*]: a portion of space of territory of indefinite extent; a country; a district; a tract of space.

REGISTER, n. *rĕj'ĭs-tĕr* [F. *registre;* It. and Sp. *registro,* a register—from mid. L. *reg'istrum, reg'istra,* for L. *regesta,* notes of things thrown together in a memorandum —from L. *re,* back; *gesta,* things carried—from *gero,* I carry]: written account, or entries in a book, of acts or proceedings for preservation and for reference; a record; the book in which the record is kept: that which regulates or adjusts: written document issued to captains of foreign-bound vessels as evidence of nationality: in *printing,* regulation of the forms, by which the lines of pages on one side of a sheet are printed exactly on the back of those on the other side: one of the inner parts of the mold in which printing-types are cast: the compass of a voice or instrument (see REGISTER OF VOICE): in an *organ,* a sliding piece of wood perforated with a number of holes for regulating the admission of wind into the pipes; sometimes, the sets of pipes or stops of an organ: a stopper or sliding plate for regulating the heat of a fire: V. to enter or cause to be entered in the record-book; to enroll. REG'ISTERING, imp. REG'ISTERED, pp. *-tĕrd:* ADJ. recorded; enrolled. REG'ISTRY, n. *-trĭ,* act of registering; place where a register is kept; a series of facts recorded. REGISTER GRATE or STOVE, grate or stove furnished with an apparatus to regulate the heat. REGISTERING PYROMETER, instrument for measuring high temperatures by the expansion of bars of metal. REGISTERING THERMOMETER, one which records its own indications. PARISH REGISTER, book for recording the baptisms, marriages, and burials of a parish. REGISTERED COMPANY, assoc. not possessing a charter, but only registered under a Joint Stock Act. REGISTERED LETTER, a letter or parcel on which a special fee has been paid for ensuring safe delivery. REGISTER OFFICE, a record office; in *Scot.,* large building in Edinburgh set apart for safe custody of the national archives, and for recording of titles and burdens connected with real estate. LORD CLERK REGISTER, Scottish officer of state who has custody of the national archives. REG'ISTRAR, n. *-trâr* [mid. L. *registrārĭŭs*]: one whose business it is to write or keep a register, as one of births, deaths, and marriages. REG'ISTRARSHIP, n. office of a registrar. REG'ISTRA'TION, n. *-trā'shŭn,* act of inserting into a register.—SYN. of 'register, n.': catalogue; roll; list; record; annals; archives; chronicle.

REG'ISTER OF VOICE: term denoting the different kinds of sound distinguishable in the graduated scale of notes produced by any individual voice. Those sounds which, like the ordinary sounds of speech, proceed naturally and freely from the vocal organs, constitute the *chest voice.* By a strained contraction of the glottis, notes may be produced of higher pitch than those of the chest voice; these are called *falsetto* or *head voice,* and have a peculiar flute or flageolet-like quality. Though often sweet and exceedingly pleasing, they cannot be used long without some amount of constraint or effort; and they are never so powerful, so open, nor so impressive as the chest voice. The lower notes, and, in most voices, by far the greater number of notes, belong to the chest voice, the falsetto being em-

ployed only in the higher and highest sounds. The sounds produced by the head voice are called the *upper register*, those produced by the chest voice the *lower register*, of the voice; and such notes of the chest voice as may be produced also by the falsetto are said to belong to the *middle register*. In a properly trained voice, the falsetto is so blended with the chest voice without perceptible break.

REGISTRA'TION OF BIRTHS, DEATHS, AND MARRIAGES: official enrolment under law of the most important facts connected with the population of the country and its social progress. In England, the first act for this purpose was passed 1836, and a general registry-office was provided in London (at Somerset House) for England and Wales. But there had long been an ecclesiastical R. of marriages, baptisms, and burials in connection with each parish church, the officiating minister being required (and being still required) to keep such a register. These registers are transmitted annually to the registrar of the diocese, who keeps the same, and allows inspection on payment of certain fees. The head of the registration office at Somerset House is the registrar-general; and many of the older registers also have been collected and put under his care Indexes are kept; and every person is entitled, on payment of a fee, to search them and to have a certified copy.

In the United States the earliest records of vital statistics were those kept by church or parish clerks, and in the absence of other records these were admitted as evidence in courts of law. But with increase in population and multiplication of churches, these records proved inadequate for public purposes. They did not relate to the whole body of a community or state, they were too scattered for general or particular reference, and they were not based on any legal obligation that would guarantee regularity and accuracy. The first thorough, systematic collections of vital statistics were made by the large life-insurance companies for their own business purposes. The public R., under strict laws carrying penalties for evasions, is a matter of comparatively recent general legislation, and is now either a function of state and city boards of health, or state and city bureaus of vital statistics. Physicians are obliged to report to the registrars all births, with dates, names of children, and names of parents, within a specified number of days; and all deaths, with dates, causes, records of attendance, etc. Clergymen are similarly obliged to report all marriages solemnized by them, with dates, names, and ages of both parties, names of parents of both parties, and of witnesses. In many states no undertaker is allowed to make an interment before receiving a certificate of the death, from either the physician in attendance or the registrar. In cases of sudden death, by accident, in public highways, etc., or at home when no physician was in attendance, nothing can be done toward burial till a coroner, co. physician, city physician, or other officer charged with the duty, has ascertained the cause of death. These officers are authorized to grant certificates of death and permits to bury, but must report the same as unofficial physicians.

REGISTRATION OF PROPERTY TITLES: the United States leads the world in its system—which is practically the same everywhere throughout the Union—of recording property transfers. The possession of a deed of property is not proof of title. The title rests legally in the person in whose name it is recorded in the books of the register or recorder, or by whatsoever name the official having charge of such records is known. The first business therefore of a person acquiring property is to have the deed registered. Otherwise the former owner could sell the same property to another, and if the latter had received no notice of the previous transfer, the transaction, and gave value for the estate, and had his deed recorded first, he could hold the property against the person who had received a previous deed, but had failed to put it on record. The officials in charge of the records are sometimes county and sometimes town officers, and the deed is recorded the moment it is received, even although not entered on the books for some time after. Therefore it is carefully stamped with the hour, minute and even second of its presentation. The old cumbersome English method of vesting title on a trunkful of deeds is therefore unknown in America, where registration has been the rule from the time of the earliest settlers, who allotted lands to each freeman, and made a record of the division.

Chattel mortgages are also recorded; otherwise the mortgage is without protection against transfer to a third and innocent party who might purchase the goods, or advance money on them.

England has been slow to follow the example of the United States in this as in other matters, but the convenience of the American system and the cumbersomeness of the English, which was growing more top-heavy year by year, has led to the adoption of a method of voluntary registration which makes it possible to transfer and hold property without having to hand over or keep a mass of old title-deeds. In Scotland an excellent system for the registration of transfers of heritable property has existed since 1617. See TORREN'S LAND SYSTEM.

REGIUM DONUM, *rē′jĭ-ŭm dō′nŭm* ['royal gift']: an annual grant of public money formerly received by the Presbyterian and other Non-conformist ministers in England, Scotland, and Ireland. The Irish Regium Donum was withdrawn by the Act of 1869, which came into force in 1871, disendowing the Irish Episcopal Church. Compensation was made of life interests; and the ministers were allowed to commute on the same terms as the clergy of the Church. In 1874 it was reported that the commutation money paid had amounted to $2,898,810. The Regium Donum in England was enjoyed by the three denominations, Presbyterians, Independents, and Baptists, from 1723 till 1851. The amount required was annually voted by Parliament till July 17, 1857.

REGIUS, a. *rē'jĭ-ŭs* [L. *rēgĭŭs*, kingly—from *rex* or *rēgem*, a king]: founded or appointed by a king, applied to certain professorships. Regius professors in the Eng. universities are those whose chairs were founded by Henry VIII.; in the Scotch universities, those the patronage of whose chairs is vested in the crown. REGIUM DONUM, *rē'jĭ-ŭm dō'nŭm* [L., royal grant]: annual grant of public money formerly paid by the legislature in aid of the incomes of the Presb. ministers in Ireland in recognition of their loyalty to the crown in certain troublous times; occasionally shared also by Baptists and Congregationalists till voluntarily renounced by them 1857—first granted 1672, abolished 1869. Its total amount (1792) was £5,000; (1863) £39,746.

REGLET, n. *rĕg'lĕt* [L. *reg'ŭlă*, a straight-edged ruler—from *rego*, I rule: F. *réglet*, a rule]: in *arch.*, a flat narrow molding rising equally on both sides, used to separate panels, etc., or to form ornaments, as frets or knots; among *printers*, reglets are strips of wood of various thicknesses.

REGMA, n. *rĕg'mă* [Gr. *rhēgma*, a rupture—from *rhēgnumi*, I break]: in *bot.*, a seed-vessel, composed of small dehiscent compartments, called *cocci*, as in *Euphorbia* and *Geranium*.

REGNANT, a. *rĕg'nănt* [L. *regnans* or *regnan'tem*, ruling or reigning; *regnum*, dominion, rule—from *rego*, I rule: F. *régnant:* It. *regnante*]: exercizing regal authority; ruling; predominant; prevalent. QUEEN-REGNANT, a queen who exercises regal authority by hereditary right, in distinction from a *queen-consort*. REGNANCY, n. *rĕg'năn-sĭ*, the condition or quality of being regnant. REGNAL, a. *rĕg'năl*, pertaining to the years a sovereign has reigned.

REGNARD, *rĕñ-nâr'*, JEAN FRANÇOIS: comic dramatist: 1655, Feb.—1709, Sep. 4; b. Paris. He received a good education, and at his father's death was heir, at the age of 20, to a considerable fortune. R. then set out for Italy to see its works of art and its monuments of antiquity: but so far from squandering his estate, he increased it largely by his luck and skill in gambling. In Italy he fell in love with a young matron of Provençal origin; and, as the story goes, was on board an Eng. frigate in company with her and her husband, *en route* for France, when the vessel was captured by Algerine pirates. R., the lady, and her husband were sold for slaves in Constantinople. The husband disappeared from the scene within 2 years, and R. and the lady were then ransomed for 12,000 livres. The pair were about to be married when the husband reappeared and claimed his wife. R., disappointed, became a rover, journeying through n. Europe, also Poland, Hungary, and Turkey. He returned to Paris 1683. He bought the place of state treasurer of the Paris dist.; he bought a city house and a country villa; he became a man of fashon, a *bon-vivant*, and a writer of comedies. His first comedy, *Le Divorce*, was performed at the Théâtre Italien 1688, and was followed by a number of small pieces. He produced his *Attendez-moi sous l'Orme*, 1694, at the Théâtre Français:

and his great comedy, *Le Joueur*, 1696. His dramatic compositions number 25; among them, besides those above named, are *Le Distrait* (1697), *Le Retour Imprévu* (1700), *Les Folies Amourenses* (1704), *Les Menèchmes* (after Plautus) (1705), and his masterpiece, *Le Légataire Universel* (1708).

REGNAULT, *rĕh-nō'*, HENRI VICTOR: French chemist and physicist: 1811, July 21—1878, Jan. 19; b. Aix-la-Chapelle. While still very young, he was left to provide for himself and his sister, came to Paris, and became a shopman in a bazaar. He made such good use of his scanty leisure, that he qualified himself for admission 1830 to the Éeole Polytechnique, and, after the two years' eourse, eame out as a mining engineer. He became a prof. in Lyon, whenee, 1840, he was recalled to Paris as a member of the Acad. of Sciences, in eonsequence of some important discoveries in organic chemistry: he had, since 1835, been proseeuting researehes on the haloid and other derivatives of unsaturated hydroearbons. Having filled ehairs in the Éeole Polytechnique and the Collége de Franee, he became 1854 direetor of the imperial poreelain manufaetory at Sèvres.

He was distinguished for extreme skill and patienee in experimental work, more than for brillianee or novelty in diseovery; and applied himself especially to determination of important physical data, such as the laws of expansion of gases, measurement of temperature, latent and speeific heats, ete. His greatest praetical work is that on the numerieal data bearing on the working of steam-engines, for whieh the Royal Soc. of London awarded him their Rumford medal. He reeeived also the Copley medal (1869) of the Royal Soc., and was one of its foreign members. In addition to numerous papers in *Annales de Chimie*, ete., he published *Cours Elémentaire de Chimie* (4 vols. 14th ed. 1871).—His son HENRI R. (1843–71), painter of some brilliant works, was killed in the Franeo-German war.

REGNIER *rĕh-ne-ā'*, MATHURIN: father of French elassic satire: 1573, Dec. 1—1613, Oet. 22; b. Chartres. Entering the priesthood, he was appointed canon of the Cathedral of Chartres, and was generously befriended by Card. de Joyeuse and the French ambassador at Rome, Philippe de Bethune. His 16 *Satires* are after the manner of Juvenal, but give proof of abundant native wit and acute observation. He composed also *Epistles*, *Elegies*, and some minor poems. A eritical ed. of his eomplete works was pub. by Viollet-le-Duc 1822.

REGORGE, v. *rē-gŏrj'* [*re*, again, and *gorge*]: to swallow again; to eject from the stomach; to vomit up.

REGRAFT, v. *rē-grăft'* [*re*, again, and *graft*]: to graft anew.

REGRANT, v. *rē-grănt'* [*re*, back, and *grant*]: to grant back.

REGRATE, v. *rē-grāt'* [F. *regrat*, sale of salt by retail; *regratter*, to exercise the trade of a broker, to bargain, to scrape again—from *re*, again; *gratter*, to scratch: comp. Sp. *regatero*, a haggler, a huckster: It. *rigattare*, to wrangle]: to buy and sell again any wares or victuals in the

same market, or within five miles thereof: to renovate old hewn stone by removing the outer surface. REGRA'TING, imp.: N. forestalling the market (see ENGROSSING: MONOPOLY): removing the surface of old hewn stone. REGRA'TED, pp. REGRA'TOR, n. *-tẽr*, one who regrates; a huckster.

REGREDE, v. *rē-grēd'* [L. *regredi*, to go back, walk back]: to retrograde; to go back: said of one of the movements of a planet's apsis under the action of a disturbing force: see PERTURBATIONS.

REGREET, v. *rē-grēt'* [*re*, and *greet*]: to greet or salute a second time: N. a return or exchange of salutation.

REGRESS, n. *rē'grĕs* [L. *regressus*, a going back—from *re*, back; *gressus*, a stepping—from *gradior*, I step: F *regrès:* It. *regresso*]: passage back; power of returning: V. *rĕ-grĕs'*, to go back or backward; to return. REGRES'SING, imp. REGRESSED, pp. *rĕ-grĕst'*. REGRES'SIVE, a. *-grĕs'sĭv*, passing back; returning. REGRES'SIVELY, ad. *-lĭ*. REGRES'SION, n. *-grĕsh'ŭn*, the act of passing back or returning.

REGRET, n. *rĕ-grĕt'* [F. *regretter*, to lament: Goth. *gretan*, to weep: Icel. *gratr*, weeping: Scot. *greet*, to cry]: a slight degree of grief or sorrow arising from some occurrence of the past; pain of conscience for some fault; slight remorse: V. to remember with pain of mind; to grieve at; to be sorry for; to repent. REGRET'TING, imp. REGRET'TED, pp. REGRET'LESS, a. *-lĕs*, without regret. REGRET'FUL, a. *-fûl*, full of regret. REGRET'FULLY, ad. *-lĭ*. REGRET'TABLE, a. *-ă-bl*, admitting of or deserving regret.—SYN. of 'regret, n.': concern; sorrow; grief; penitence; remorse; self-condemnation; lamentation; repentance.

REGUERDON, n. *rĕ-gẽr'dŏn* [*re*, and *guerdon*]: in *OE.*, reward; recompense: V. to reward.

REGULA, *rĕg'ū-la:* band under a Triglyph (q.v.) in the Doric style, or the bands between the canals of the triglyphs.

REGULAR, a. *rĕg'ū-lẽr* [L. *regŭlāris*, of or pertaining to a straight-edged ruler or bar of wood—from *reg'ŭlă*, a rule—from *rego*, I rule: It. *regolare*, regular, exact: F. *régulier*, regular]: according to rule, order, or established practice; in accordance with the ordinary form or course of things; consistent; governed by rules; uniform in practice; pursued with uniformity or steadiness; straight; level; having the parts all symmetrical; in *bot.*, applied to a flower, the parts of which are of similar form and size: N. in the *Chh. of Rome*, member of a religious order professing and following a certain rule of life, as distinguished from the secular clergy (see REGULARS): soldier of the permanent army. REG'ULARLY, ad. *-lĭ*. REG'ULAR'ITY, n. *-lăr'ĭ-tĭ*, agreeableness or accordance with rule or established practice; certain order; method; steadiness in a course. REGULAR FIGURES, in *geom.*, bodies whose sides and angles are equal, of which there are five kinds (see REGULAR PLANE FIGURES). REG'ULATE, v. *-lāt* [mid. L. *reaŭlātus*, regulated]: to adjust

by rule; to put or keep in good order; to dispose; to arrange; to subject to rules or restrictions. REG'ULATING, imp. REG'ULATED, pp. REG'ULATOR, n. *-lā-tẽr*, the small spring of a watch which regulates its motions; the part of any machine which regulates its movements. REG'ULA'TION, n. *-lā'shŭn*, the act of regulating; a rule or order prescribed by a superior. Military and Naval Regulations are the official codes of rules for guidance of officers in all cases in which uniformity of practice is requisite, and which cannot rightly be left to individual discretion: they are in three classes, those affecting drill, discipline, and finance. REG'-ULATIVE, a. *-lā-tĭv*, tending to regulate.—SYN. of 'regular, a.': methodical; orderly; normal; periodical; symmetrical; —of 'regulate': to arrange; order; adjust; dispose; rule; govern; methodize; direct;—of 'regulation': rule; order; law; decree; method; principle.

REGULAR CANONS (Lat. *Canonici Regulares*, canons bound by rule): members of the canonical bodies of cathedral clergy which adopted the reform for those clergy introduced in the 11th c. They were thus distinguished from the so-called 'secular canons,' who continued exempt from rule, and who are represented in modern times by the canons, prebendaries, and other members of cathedral chapters, in those churches in which the full cathedral system of the Rom. Cath. Church is maintained. The rules of the regular canons being variously modified in different countries and ages, a variety of religious orders arose therefrom, Augustinians, Premonstratensians, etc. see CANON: AUGUSTINS.

REGULAR PLANE FIGURES: surfaces whose perimeters are equilateral and equiangular polygons. They are named according to the number of sides which compose the perimeter, being triangles, squares, pentagons, hexagons, etc., according as they have 3, 4, 5, 6, etc., sides respectively; and to all except the *Square* (q.v.) the prefix 'regular' or 'equilateral and equiangular' is applied, to distinguish them from other plane figures which have an equal number of sides, but have not all their sides and angles equal. Circles can be inscribed in and described about all regular figures: see POLYGONS. *Regular bodies, solids, or polyhedrons* are those solids whose sides are plane figures, all the plane figures being equal, similar, and regular. The number of such bodies is necessarily very limited; in fact, no more than *five* such bodies are possible. they are the tetrahedron or equilateral pyramid, the hexahedron or *cube*, the octahedron or body bounded by eight equal and equilateral triangles, the dodecahedron or body contained under 12 regular pentagons, and the icosahedron or body contained by 20 equal and equilateral triangles: the sides or faces of the first, third, and fifth of these solids are equilateral triangles; those of the second are squares; and those of the fourth are regular pentagons. These five regular solids were described by Plato; they are thence generally known as the Platonic bodies, or Plato's five solids.

REGULATORS: a name adopted in South Carolina, about 10 years before the Revolution, by citizens who organized themselves to put down lawlessness and enforce respect for life and property. Some years later in North Carolina an organization calling themselves 'Regulators' was formed to resist the extortion and oppression practiced by officers of the colonial government. Governor Tryon led a military force against them, defeating them near the Allemance creek, May 16, 1771. Tryon hanged six of the Regulators for treason.

REGULUS, n. *rĕg'ū-lŭs* [L. *reg'ŭlus*, a petty king—from *rex* or *rēgem*, a king]: term applied by the old chemists to several inferior metals when freed from impurities, as antimony, arsenic, bismuth, etc.; now sometimes used in a generic sense for metals in different stages of purity, but still retaining to some extent the impurities of their state of ore. Thus, when the ore sulphuret of copper is smelted, the product of the different furnaces through which it passes is called regulus until it is nearly pure copper. The name, which signifies 'little king,' was given by the alchemists to the metal antimony first, on account of its power to render gold brittle. In *ornith.*, genus of insessorial birds allied to the wren (see GOLDEN-CRESTED WREN).

REGULUS, *rĕg'ū-lŭs*, MARCUS ATILIUS: favorite hero with the Roman writers: Roman consul for the first time B.C. 267, who for his successes against the Sallentini, obtained the honor of a triumph. Chosen consul a second time B.C. 256, he was sent in the 9th year of the first Punic war with his colleague L. Manlius Vulso at the head of an army on board of 330 ships against the Carthaginians, whose fleet he met and totally defeated off Heraclea Minor. Regulus, after landing, had such success in battle that Manlius and half the army were recalled to Rome; but at last, B.C. 255, he met total defeat; 30,000 Romans were left dead on the field, about 2,000 fled, and Regulus, with 500 more, was taken prisoner. Regulus remained in captivity five years; but when reverses induced the Carthaginians to solicit peace, Regulus was released on parole and sent to Rome in company with the Punic envoys. The rest of his history is one of the most favorite of tales with the Roman poets and historians, as a model of supreme heroism. They record how he earnestly dissuaded the Roman senate from agreeing to any of the Carthaginian proposals, even to an exchange of prisoners, of which he was one (though no reason appears why such an exchange should not have been effected); and how, after he had succeeded in obtaining the rejection of the Carthaginian offers, he resisted all persuasions to break his parole and remain in Rome, and returned with the ambassadors to Carthage, where the rulers, maddened by the failure of their schemes, put him to death. The story is, that when the news of this event reached Rome, retaliations

equally atrocious were committed on two of the noblest Carthaginian prisoners. Unfortunately this noble instance of heroic patriotism has not even been noticed by Polybius (about B.C. 200), though he details at great length the other achievements of R.; and Palmerius (Paulmier de Greutes-mesnil) and Beaufort, two eminent historical critics, have adduced strong reasons for the story being merely invented to excuse the horrible treatment of the captive Carthaginians. Niebuhr roundly declares the story a forgery, and believes that R. died a natural death; though, except the silence of Polybius (utterly unaccountable on the supposition of the common story being true), there would be no reason to doubt the statement in which all the other Roman historians agree, that he was put to death by the Carthaginians.

REGUR, n. *rē'gėr:* native name for the cotton soil of India, a bluish-black or greenish-gray loam, which has yielded a constant succession of crops—one of cotton, and two of corn—for 20 centuries. It is 3 to 20 ft. thick, and covers extensive level tracts in the peninsula.

REGURGITATE, v. *rĕ-gėr'jĭ-tāt* [mid. L. and It. *regurgĭtārĕ*, to overflow—from L. *re*, again; *gurges* or *gur'gĭtem*, a whirlpool]: to throw or pour back, or cause to surge back; to throw back in great quantity. REGUR'GITATING, imp. REGUR'GITATED, pp. REGUR'GITA'TION, n. *-tā'shŭn*, the act of flowing or pouring back by the same orifice; the act of swallowing again; the natural and easy vomiting of food by infants.

REHABILITATE, v. *rē'hă-bĭl'ĭ-tāt* [F. *réhabiliter;* Sp. *rehabilitar*, to reinstate—from L. *re*, again; *habĕō*, I have]: to reinstate; to restore to former rank or privileges, or to rights which had been lost or forfeited—a term of the civil and canon law. RE'HABIL'ITATING, imp. RE'HABIL'ITATED, pp. RE'HABIL'ITA'TION, n. *-tā'shŭn* [F.]: restoration to former rights.

REHEAR, v. *rē-hēr'* [*re*, again, and *hear*]: to hear again; to try a second time. REHEAR'ING, imp.: N. in *law*, a second hearing or trial. REHEARD', pt. pp. *-hėrd'*, heard a second time.

REHEARSE, v. *rē-hėrs'* [OF. *rehercer*, to repeat what one has already said, to harrow again—from *re*, again; *hercer*, to harrow; *herce*, a harrow]: to relate in the hearing of others; to recite; to repeat; to recite in private preparatory to a public performance. REHEARS'ING, imp. REHEARSED', pp. *-hėrst'*. REHEARS'ER, n. *-ėr*, one who rehearses. REHEARS'AL, n. *-ăl*, a recital; a telling, as of particulars in detail; private recital, as of a dramatic piece before the public representation of it, or of a musical composition before its public performance.—SYN. of 'rehearse': to recount; narrate; tell; recite; recapitulate; detail; describe; relate; repeat.

REI, or REE, or REA, n. *rē* [Sp. *rey*, king—fr. L *rex*]: nominal unit of account in Portugal and Brazil, but no longer existing as a current coin; multiples of it, however, still form the authorized coinage in both countries. In Portugal, copper pieces of 5, 10, and 20 (*vintem* = 2 cts. nearly) reis, silver coins equivalent in value to 50, 100 (*testoon*), 200, 480 (*cruzado novo*), 500, and 1,000 (*milreis*) reis, and gold pieces of 1,000, 2,000, 4,000 (*moeda douro*), 5,000, 6,400, 10,000 (gold crown), and 12,800 (*dolra*) reis, are the current coin of the realm; but accounts are kept almost exclusively in milreis and reis. 20 reis, or a *vintem*, equal 2 cents nearly: see MILREI. The milrei in Brazil is, however, equivalent to only about 54·6 cents; while that of Portugal is about $1.08. Gold and silver coins have almost disappeared in Brazil, the circulating medium consisting of notes of a milrei and upward, together with copper and bronze coins.

REICHENAU, *rī'ċhėn-ow:* island in the Zellersee, Untersee, or w. arm of the lake of Constance; 3 m. long, 1 m. wide; it is connected with the e. shore by a causeway 1 m. long. It belongs to the duchy of Baden. It is divided into 3 parishes, Oberzell, Niederzell, and Mittelzell. R. takes its name from a Benedictine abbey, *Augia Dives*, founded in the 9th c. and famed in the middle ages for the learning of its monks as well as for its wealth. The abbey chh., now the parish chh. of Mittelzell, contains the tomb of King Charles the Fat. R. is a picturesque island, and produces abundance of grain and wine. It contains many interesting memorials of Roman and Carlovingian times. Pop. (1885) 1,500.

REICHENBACH, *rī'ċhėn-bâċh:* flourishing manufacturing town of Saxony, 11 m. s.w. of Zwickau. It contains wool and cotton mills, stoneware and other factories; and produces extensively woolen fabrics, leather, nankeens, lace dresses, damask napkins, waistcoatings, and hosiery. Pop. (1890) 21,498; (1900) 24,499.

REI'CHENBACH: town of Prussian Silesia, on the right bank of the Peilbach, romantically situated at the foot of the Eulen Mts., 46 m. by railway s.e. of Liegnitz. It has cotton factories, and carries on linen and woolen manufactures, yarn bleaching, dyeing, and printing. Pop. (1885) 7,368; (1890) 13,040; (1895) 14,058.

REI'CHENBACH, KARL, Baron VON: German naturalist and technologist: 1788, Feb. 12—1869, Jan. 19; b. Stuttgart, cap. of Würtemberg. He was educated at Tübingen, receiving the degree PH.D. He soon formed a project of founding a new German state in the South Sea, but his plans were suspected of some hidden political significance, and R. was imprisoned in the fortress of Hohenasperg. On his release he turned his attention to the natural sciences, and their application to the industrial arts; and with Hugh, Count of Salm, he established various manufactories in Moravia 1821, which he superintended so effectively that with the proceeds he bought large estates, including the château of Reisenberg. He was created a

baron by the king of Würtemberg. R.'s position as manager of his manufactories gave opportunity for scientific investigation, which brought to light many new facts of much value, especially as to the compound products of distillation of organic substances; among which he made known creasote (1833), and Paraffin (q.v.). In later years he went into speculations less practical, and discovered, as he thought, a new force in nature (see OD). Among his literary works are, *Geologische Mittheilungen aus Mähren* (Vienna 1834); and several works on 'odic force,' pub. 1852–58 mostly at Stuttgart. He died at Leipzig.

REICHENBERG, *rī'ċhĕn-bĕrċh:* largest town, after Prague, in Bohemia: in the most populous and industrious district of the Austrian monarchy, in a romantic valley on the Neisse, 52 m. n.n.e. of Prague. Linen, cotton, and woolen fabrics are manufactured; also firearms, hats, leather, shoes, gold and silver wares, musical instruments, etc. Pop. (1880) 28,090; (1890) 31,033; (1900) 34,099.

REICHENHALL, *rī'ċhĕn-hâl:* small town of Bavaria, on the Saal, 8 m. s.w. of Salzburg. It was almost wholly consumed by fire 1834, and has since been handsomely rebuilt. It is the centre of the Bavarian salt-works. Of its 18 salt-springs, which burst forth about 50 ft. below the surface of the ground, and to which a spacious shaft has been sunk, some are so strong in the brine as to be fit for boiling at once; but generally they are subjected to a preliminary evaporating process. The strongest and most abundant spring, containing 24 per cent. of salt, and yielding 3,300 cubic ft. of water every 24 hours, is perhaps the most copious salt-spring in the world: from it alone about 200,000 cwts. of salt are obtained annually. A brine conduit, 60 m. in length, conveys the water of salt-springs from Berchtesgaden, through R., over mountains nearly 2,000 ft. high, to Traunstein and Rosenheim, in the vicinity of which abundant timber for fuel is procurable. Pop. (1880) 3,271; (1885) 3,436; (1890) 3,791.

REICHSRATH, n. *rīċhs'rât* [Ger., council of the empire: *reich*, kingdom; *rath*, council]: the imperial parliament of the Austrian empire. REICHSTAG, n. *rīċhs'tâg* [Ger., imperial diet: *reich*, kingdom, realm; *tag*, a day]: in *Ger.*, meeting of the states of the empire; the German parliament.

REICH'STADT, NAPOLEON, FRANÇOIS CHARLES JOSEPH, Duke of, entitled by the Bonapartists NAPOLEON II: 1811, Mar. 20—1832, July 22; b. Paris; son of Napoleon I. by Maria Louisa of Austria. His father's joy at his birth was unbounded: '*C'est un roi de Rome,*' he cried to the crowd of congratulators who pressed into his apartments on hearing the news. The infant prince was baptized June 9 in the cathedral of Notre Dame by Card. Fesch. After the reverses of 1814, Napoleon abdicated in favor of his son; but the senate took no notice of Napoleon II., and called Louis XVIII. to occupy the French throne; whereupon Maria Louisa and her child removed to the palace of Schönbrunn near Vienna, where they remained

all the treaty of Vienna had rearranged the affairs of Europe. Maria Louisa then took possession of the sovereign duchy of Parma which had been conferred on her, while her son remained at the Austrian court with his grandfather Franz I., who was much attached to him. By an imperial patent, 1818, July 22, he was created Duke of R., with rank of an Austrian prince. He received a liberal education, but never had robust health, nor showed a vigorous intelligence. At the July revolution 1830, his name was mentioned as a candidate for the French throne; and Talleyrand, it is even believed, proceeded to Vienna to advocate his cause; but was coldly received, and the project dropped. The constitution of the poor youth was undermined by laryngeal phthisis, and he died at Schönbrunn. His last words, addressed to his mother, were *'Ich gehe unter, meine Mutter, meine Mutter!'* He was interred with magnificent pomp in the imperial tomb at Vienna.

REID, *rēd*, MAYNE: author: 1818–1883, Oct. 22; b. Ireland. He came to this country 1838, made various hunting expeditions in the region of the Red and Missouri rivers, and travelled extensively in all parts of the Union. He then spent some time in Philadelphia and wrote for several periodicals. He served with great credit as capt. of U. S. troops in the Mexican war, and with a company which he had gathered went to Europe 1849 to aid the Hungarians in their revolution, but the conflict was ended before they reached port. He spent some years in England, and became a famous writer of stories for boys. His works deal largely with thrilling adventure. Among the nearly 50 vols. which he published were *The Rifle Rangers* (1850); *Osceola* (1858); *The Maroon* (1862); and *The Castaways* (1870). His works were published in 15 vols. (1868), and other editions have since appeared. He died in England.

REID, SAMUEL CHESTER: naval officer: 1783, Aug. 25 —1861, Jan. 28; b. Norwich, Conn.; son of Lieut. John R. of the British navy. When 11 years of age he went to sea; was taken prisoner by a French privateer, and later became a midshipman in the U. S. navy. He was in command of the *General Armstrong*, a privateer brig, in the war of 1812; and 1814, Sep. 26, 27, fought a remarkable battle with the boats from three heavily armed Brit. warships at Fayal, in the Azores. He had only 7 guns and 90 men. The Brit. loss was 120 men killed and 180 wounded; the American loss two killed and seven wounded. R. scuttled the privateer, and with his crew escaped to land, where they fortified an old convent, but were not attacked. The Brit. govt., after prolonged correspondence, made an apology for the attack on an American vessel in a neutral port. The result of the engagement was important: it prevented the Brit. ships from promptly attacking New Orleans, and so enabled Gen. Jackson to reach the city in time to save it from capture. R. became a sailing-master in the navy, was warden of the port of New York, invented and erected signal telegraphs, had charge of the pilot boat service, and designed the present style of the U. S. flag. He died at New York.

REID, THOMAS: 1710, Apr. 26—1796, Oct. 7; b. Strachan, county parish in Kincardineshire, Scotland, where his father was the Presb. clergyman. His mother was of the family of the Gregories (q.v.). Reid began his education at the parish-school, and at the age of 12 became a student of Marischal College in Aberdeen. He took his degree M.A. 1726, and remained in Aberdeen as college librarian, his chief studies being mathematics and the philosophy of Newton. In 1736 he went with a friend to England, where he was introduced to distinguished men in Oxford, Cambridge, and London. In 1737 he was presented by the senatus of King's College to be minister of the parish-church at New Machar in Aberdeenshire. The parishioners were bitterly opposed to his appointment, but his conduct and manner gradually won them. It is said that, from distrust of his powers, instead of composing for the pulpit himself, he preached the sermons of the English divines Tillotson and Evans. In 1740 he married his cousin, who greatly aided in the work of his parish. In 1739 Hume's *Treatise on Human Nature* appeared; and its perusal was the impulse that determined his future philosophical career. He had fully adopted the idealism of Berkeley, but being now revolted by the conclusions drawn from it by Hume, sought a new foundation for the common notions as to a material world. In 1748 he contributed to the Royal Soc. of London a short essay on *Quantity*, occasioned by what he considered an erroneous application, by Hutcheson, of the forms of mathematical reasoning to ethics. In 1752 he was appointed one of the professors of philosophy in King's College, Aberdeen. Here he followed the established course of teaching in three successive years to the same students, mathematics, nat. philosophy, and moral philosophy. He was active in all the business of the university. He also founded a Literary Soc. in Aberdeen, which had among its members Campbell, Beattie, and other men of ability: to this soc. he submitted his first draft of the *Inquiry into the Human Mind*. In 1763 he was chosen to succeed Adam Smith as prof. of moral philosophy in the Univ. of Glasgow. Thus freed from the duty of teaching physical science, he applied himself thenceforth to metaphysical and mental speculation. In 1764 he published his *Inquiry*. His thirst for general science never left him: at the age of 55, he attended Black's lectures on Heat. In 1781 he retired from his chair to give his remaining strength to the publication of his works on the mind. In 1785 the *Philosophy of the Intellectual Powers* appeared; 1788, the *Active Powers*, which marked the close of his life as an author, although his health and vigor endured to the end. In 1774 he had contributed his account of Aristotle's logic to Lord Kames's *Sketches*. The publication of the *Active Powers* closed his career as author, though to the end of life he kept his bodily and mental vigor.—See COMMON SENSE, THE PHILOSOPHY OF.

R. had many points of resemblance to his great contemporary Kant. Both were occupied till middle life with mathematical and physical studies; both were roused to metaphysical research by Hume, and each became in his own country the chief of a school whose aim was to deliver philosophy from skepticism, and to do so by resting finally on principles of intuitive, or *a-priori* origin.—R.'s refutation of Berkeley, notwithstanding the powerful support of Hamilton, is now generally considered a failure. His own account of the motives that led him to abandon Idealism proves that he completely misconceived the real drift of that famous speculation.

REID, Whitelaw: journalist and diplomat: b. Xenia, O., 1837, Oct. 27. He graduated at Miami Univ. 1856; entered political life and took the stump for Frémont in the presidential campaign of the same year; became editor of the Xenia *News* and Columbus correspondent of the Cincinnati *Gazette;* and at the beginning of the civil war was appointed war correspondent of the *Gazette,* writing under the pen name 'Agate.' He held a staff appointment with Gen. Rosecranz, was attached to the Army of the Cumberland for some time, and was present at the battles of Shiloh and Gettysburg. 1863–66 he was librarian of the house of representatives at Washington, and after the war engaged in cotton-planting in La. for a short time. In 1868 he removed to New York on invitation of Horace Greeley, and became an editorial writer on the *Tribune.* A year latter he succeeded to the managing editorship, and during Greeley's presidential campaign 1872 he had full control of the paper. On the death of Greeley, R. became editor and chief owner of the paper. He declined the office of U. S. minister to Germany, tendered by Presidents Hayes and Garfield, and held the mission to France 89-92. He is a life regent of the Univ. of N. Y. In 1892 he ran for vice-pres., on the repub. ticket and was defeated. In 1897 he was appointed special envoy to represent the U. S. at Queen Victoria's diamond jubilee, and was a member of the Peace Commission to Paris, 1898. R. has published *After the War* and *Ohio in the War* (1868); *Schools of Journalism* (New York 1871); *The Scholar in Politics* (1873); *Some Newspaper Tendencies* (1879); *Problems of Expansion,* etc.

REIGATE, *rī'gāt:* municipal borough and thriving market-town of Surrey, England; pleasantly situated at the s. base of the North Downs, 23 m. s. of London by the South-eastern railway. From very early times, it was considered a place of strength; and after the Conquest, it was granted to the Earls of Warrenne. Of the castle built by these earls, there are only slight remains; but beneath the site are several large vaults or caverns, excavated in the sandstone not earlier than the 13th c. The church is in various styles of architecture—the oldest portions dating from the 12th c. Under its chancel is buried Charles Howard, Earl of Effingham, Elizabeth's lord high admiral, conqueror of the Spanish Armada. Pop. (1900) 25,000.

REIGN, v. *rān* [L. *regnārĕ*, to rule or govern—from *rex* or *rēgem*, a king: It. *regnare;* F. *régner*, to reign]: to rule as a king; to hold sovereign power; to be predominant: N. royal power; sovereignty; the time during which a king rules; empire; power; influence. REIGN'ING, imp. REIGNED, pp. *rānd.*—SYN. of 'reign, v.': to govern; direct; control; rule; prevail.

REIGN OF TERROR: that period in the history of France when the revolutionary govt., under the guidance of Maximilien Robespierre, supported itself by the pure operation of terror, exterminating with the guillotine all the enemies, or supposed enemies, of the democratic dictatorship. In 1793 the convention vested the govt. in a 'Committee of Public Safety,' a body belonging to the party of the Mountain (q.v.), and of which Robespierre, Couthon, and St. Just became the triumvirate. This committee, to which every other authority in the country was subjected, deliberated in secret, and the convention sanctioned all its decrees. Louis XVI. had already been brought to the scaffold; and Oct. 16, his queen, Marie Antoinette, after being subjected to every indignity, was beheaded; the Princess Elizabeth suffering the same fate 1794, May. The execution of the Girondists (q.v.) followed, and that of the Duke of Orleans. The guillotine became the only instrument of government: a look or a gesture might excite suspicion, and suspicion was death. The Calendar was remodelled, and all religious rites suppressed. When the power of the Committee had attained its climax, a decree was passed abrogating every delay or usage calculated to protect an accused person; but from that moment a reaction began. A section of the Mountain party were satiated with blood, and had become impatient of the control of Robespierre. 1794, July 28, he was denounced in the convention for his barbarities; and his death (see ROBESPIERRE) brought to a close this frightful era in French history.

REI'KIAVIK: see ICELAND.

REILLUMINATE, v. *rē'ĭl-lō'mĭ-nāt* [*re*, again, and *illuminate*]: to enlighten again; to reillumine.

REILLUMINE, v. *rē'ĭl-lō'mĭn* [*re*, again, and *illumine*] to enlighten again.

REIMARUS, *rī-mâ'rûs*, HERMANN SAMUEL: German philologist: 1694–1765; b. Hamburg, where his father was prof. at the Johanneum Gymnasium. He visited the universities at Jena and Wittenberg, travelled in Holland and England; and was, on his return, elected Rector at Wismar, and subsequently prof. of Hebrew and mathematics at the Gymnasium of Hamburg; and there he died. He is author of the so-called 'Wolfenbüttelsche Fragmente eines Unbekannten,' first published by Lessing in his *Beiträge zur Geschichte und Literatur aus den Schätzen der Wolfenbüttelschen Bibliothek.* These 'Wolfenbüttel Fragments' till then known only in MS. by a few of R.'s intimate friends, produced profound sensation throughout Germany: since in them the author boldly denied the supernatural

origin of Christianity. Another work, in the same direction, is his *Vornehmste Wahrheiten der Natürlichen Religion;* of miscellaneous character are *Primitia Wismariensia, De Vita Fabricii, Dissertatio de Assessoribus Synedrii Magni,* etc. His ed. of *Dio Cassius* is one of the most valuable contributions to classical philology.

REIMBURSE, v. *rē'ĭm-bẽrs'* [F. *rembourser;* It. *rimborsaré,* to reimburse (see PURSE)]: to refund; to repay or return what has been taken, lost, or expended. RE'IMBURS'ING, imp. RE'IMBURSED', pp. *-bẽrst'*. RE'IMBURS'ER, n. *-bẽrs'ẽr,* one who reimburses. RE'IMBURSE'MENT, n. *-mĕnt,* repayment of what has been taken, lost, or expended; the act of making good, as loss or expense.

REIMPLANT, v. *rē'ĭm-plănt'* [*re,* again, and *implant*]: to implant again.

REIMPORT, v. *rē'ĭm-pōrt'* [*re,* again, and *import*]: to import again; to reconvey. RE'IMPORTA'TION, n. the act of reimporting; that which is reimported.

REIMPOSE, v. *rē'ĭm-pōz'* [*re,* again, and *impose*]: to impose anew, as a tax.

REIMPREGNATE, v. *rē'ĭm-prĕg'nāt* [*re,* again, and *impregnate*]: to impregnate again.

REIMPRESS, v. *rē'ĭm-prĕs'* [*re,* again, and *impress*]: to impress anew. RE'IMPRES'SION, n. a second or repeated impression.

REIMPRINT, v. *rē'ĭm-prĭnt'* [*re,* again, and *imprint*]: to imprint again.

REIMPRISON, v. *rē'ĭm-prĭz'n* [*re,* again, and *imprison*]: to imprison again, or after a release from prison. RE'IMPRIS'ONMENT, n. the act of confining again in prison after a release from it.

REIMS: see RHEIMS.

REIN, n. *rān,* plu. REINS, *rānz* [OF. *resne* or *reine;* F. *rêne;* It. *redina;* Sp. *rienda,* a rein or bridle: Bret. *réna,* to direct or govern: L. *retinac'ŭlum,* a tether—from *retinērĕ,* to hold in: comp. Gael. *srian,* a bit]: the straps of a bridle which extend from the horse's mouth to the hands of the rider or driver, and by which the horse is restrained and guided; the instrument or power of curbing or restraining; government: V. to govern by a bridle or reins; to control; to restrain. REIN'ING, imp. REINED, pp. *rānd.* REIN'LESS, a. *-lĕs,* without restraint; unchecked. TO GIVE THE REINS TO, to give license; to allow to be without control. TO TAKE THE REINS, to assume control.

REINCENSE, v. *rē'ĭn-sĕns'* [*re,* again, and *incense*]: to incense again.

REINCORPORATE, v. *rē'ĭn-kŏr'pō-rāt* [*re,* again, and *incorporate*]: to incorporate again; to embody anew.

REINCUR, v. *rē'ĭn-kẽr'* [*re,* again, and *incur*]: to incur a second time.

REINDEER, n. *rān'dēr* [Icel. *hreinn;* Ger. *rennthier;* Dut. *rendier;* Dan. *rensdyr,* a reindeer], (*Cervus tarandus* or *Tarandus rangifer*): species of Deer (q.v.), native chiefly of the arctic regions; by far the most valuable and important of all the species of deer, and the only one which has been thoroughly domesticated and brought into service by man. It is found wild in Europe, Asia, and America, in Spitzbergen. The Caribou, or American R., of N. America s. to Maine, and the Barren Ground Caribou of Greenland and n. British America, are regarded as but varieties of the R. It is not a native of Iceland, but was introduced by Gov. Thodal 1770, and soon became thoroughly naturalized; great herds now roaming over the wildest parts of the interior, but approached with difficulty by the hunter, and of little value to the inhabitants. It is not there known as a domestic animal.—The R. attains its greatest size in the arctic regions; and in w. Europe it is not found very far s. of the arctic circle; but

Reindeer (*Cervus tarandus*).

in Siberia and in America its range extends much further s.—in America, almost to the latitude of Quebec; and in w. Asia, along the whole chain of the Ural Mountains, and even to the s. of Astrakhan, almost to the Caucasus.

The wild R. of Lapland is almost equal in size to the stag, but there are great differences of size in different districts, the largest size being attained generally in high polar regions. The domesticated R. is never so large as the largest wild ones; but the domesticated R. of Siberia is, as also the wild one, much larger than that of Lapland. The R. is very inferior in gracefulness to the stag, and, indeed, to most species of deer, being of rather heavy appearance, with comparatively short and stout limbs, the withers much elevated as in the elk, and the neck carried almost straight forward. The tail is very short. There is little or no mane, but the hair of the lower parts of the neck is very long and shaggy. Both sexes have large horns, those of the male being larger, often more than four ft. long. They are slender and cylindrical almost to the

tip in young animals, but in old ones become palmated there, though still slender and cylindrical at the base; they are more or less branched, and from the base spring one or two branches, comparatively short, but also in old animals much palmated, so that the armature of the head is of peculiar appearance. The R. is said to use its horns to remove the snow from the lichens (see REINDEER MOSS), which form great part of its winter food; it also scrapes up the snow with its feet and turns it up with its snout; and by a beautiful provision of nature, the feet, forehead, and nose are protected by a remarkably hard skin. The R. is gregarious, partially migratory—its migrations, however, regulated not by climate, but by facility of obtaining food. To the Laplander the R. constitutes the chief part of his wealth; and many Laplanders possess herds of 2,000 or more, which they feed chiefly in the mountainous tracts in summer, and in the lower grounds in winter. The flesh is excellent; as is also the milk, which is much used. The skins are used for clothing, tents, and bedding. The hard skin of the face and feet is valued by the Laplanders for making shoes. The R. is also extremely valuable as a beast of draft, for which purpose it is harnessed to sledges. It is capable of maintaining a speed of nine or ten m. an hour for a long time, and can easily draw a weight of almost 200 lbs. besides the sledge. It is much employed for this purpose in Siberia as well as in Lapland; but in America it is merely an object of chase, valued for its flesh, fat, and hide. Among other methods resorted to by the Esquimaux and other Indians for its capture is that of making pits in the snow, covered with a slab of ice, which revolves on its own centre when the R. sets foot on it. The flesh and fat are made into Pemmican (q.v.), besides being used in a fresh state. A very thick layer of fat lies under the skin of the back of the male.—The R. suffers grievously during summer from the attacks of various kinds of insects, particularly of a species of Bot (q.v.), which is sometimes even destructive.

REIN'DEER MOSS (*Cenomyce rangiferina* or *Cladonia rangiferina*): lichen of great importance to the Laplanders and other inhabitants of the northernmost regions of Europe and Asia, as forming the chief winter food of the reindeer. It is found in almost all parts of the world, but is most abundant and luxuriant in the arctic regions. It is common in Britain, growing in moors and on mountains. It covers extensive tracks in Lapland and other far northern countries, making them even in summer as white as snow, and often thus occupies the ground in pine forests. When pine forests are destroyed by fire, it soon springs up in its greatest luxuriance. It is a very variable plant, but always consists of a much-branched erect cylindrical

Reindeer Moss (*Cenomyce rangiferina*).

tubular thallus, with small perforations in the axils, and attains a height of two inches and upward. The branches of plants which grow together usually mix intricately into one mass. The importance of this lichen was brought into notice first by Linnæus in a beautiful passage of *Flora Lapponica*. The reindeer reach it by scraping with their feet, even when it is covered with very deep snow. It is capable of being used for human food, and was recommended for this purpose in times of dearth by an edict of Gustavus III. of Sweden. Its taste is pleasant, though attended with a slight pungency or acridity. It is generally boiled in reindeer milk. Its nutritious qualities depend chiefly on the Lichenin (q.v.) which it contains.

REINDUCE, v. *rē′ĭn-dūs′* [*re*, again, and *induce*]: to induce again.

REINFORCE, v. *rē′ĭn-fōrs′* [*re*, again, and *enforce*]: to strengthen with new force, assistance, or support—particularly used in reference to military or naval operations: N. in *gunnery*, the two sections of the length of a smooth-bore gun which are next the breech; the first reinforce is between the base ring, and that next in rear of the trunnions; the second is between the first reinforce and the ring in front of the trunnions: the gun is made thicker at these parts, to resist more effectually the explosive action of the powder. The thickness of metal is less at the second reinforce than at the first, the powder being considered to have already exerted its greatest disruptive force, though this conclusion is open to question. The first and second reinforce are shown (with their reinforce rings) at AC, CD, in the figure under GUN. RE′INFORC′ING, imp. RE′INFORCED′, pp. *-fōrst′*. RE′INFORCE′MENT, n. an additional force; fresh assistance; any augmentation of strength or force by adding something.

REINFORM, v. *rĕ-ĭn-fawrm′* [*re*, again, and *inform*]: to inform anew.

REINFUSE, v. *rē′ĭn-fūz′* [*re*, again, and *infuse*]: to infuse again.

REINHABIT, v. *rē′ĭn-hăb′ĭt* [*re*, again, and *inhabit*]: to inhabit again.

REINKENS, *rīn′kĕns*, JOSEPH HUBERT, D.D.: bishop of the Old Catholic Chh.: b. 1821, Mar.1, at Burtscheid near Aix-la-Chapelle. Entering the Univ. of Bonn 1844, he wrote the prize essay in philosophy on the *Greek Idea of Virtue*, in his first year. He studied in the ecclesiastical seminary at Cologne 1847–8, and took the degree D.D. at Munich 1849. He studied chh. history at Breslau 1850–52, and in 1852 was second cathedral preacher, and 1853 first cathedral preacher; he was appointed prof. of theology 1857. He incurred ecclesiastical censure 1870 by his work *Pope and Popedom*, and the chh. authorities tried in vain to hinder the publication, the same year, of his work on *Papal Infallibility*. He was suspended from the priesthood 1870, Nov. 20, because of his having signed with Döllinger and others, the Nürnberg manifesto against the Vatican Council. Afterward he devoted him-

self to promotion of the Old Catholic movement. He was consecrated bp. 1873 by Dr. Heykamp, Bp. of Deventer, Holland. He wrote very many books on historical and doctrinal questions at issue between the Roman Chh. and the Old Catholics. He d. 1896, Jan. 5.

REINQUIRE, v. *rē′ĭn-kwīr′* [*re*, again, and *inquire*]: to inquire a second time.

REINS, n. plu. *rānz* [L. *rēnēs*, the kidneys, the reins: Gr. *phrēn*, plu. *phrĕnĕs*, the parts about the heart: It. *reni;* F. *reins*, the reins]: the kidneys, or the parts about them; the loins, or lower part of the back; in *Scrip.*, the inward parts; the seat of the affections and passions.

REINS (of a horse): see REIN.

REINSERT, v. *rē′ĭn-sėrt′* [*re*, again, and *insert*]: to insert a second time. RE′INSER′TION, n. a second insertion.

REINSPECT, v. *rē′ĭn-spĕkt′* [*re*, again, and *inspect*]: to inspect again. RE′INSPEC′TION, n. the act of inspecting a second time.

REINSPIRE, v. *rē′ĭn-spīr′* [*re*, again, and *inspire*]: to inspire anew.

REINSPIRIT, v. *rē′ĭn-spĭr′ĭt* [*re*, again, and *inspirit*]: to inspirit anew.

REINSTALL, v. *rē′ĭn-stawl′* [*re*, again, and *install*]: to install again; to seat anew. RE′INSTAL′MENT, n. a second instalment.

REINSTATE, v. *rē′ĭn-stāt′* [*re*, again, and *instate*]: to place again in a former state; to restore. RE′INSTAT′ING, imp. RE′INSTAT′ED, pp. RE′INSTATE′MENT, n. the act of restoring to a state from which one had been removed.

REINSTRUCT, v. *rē′ĭn-strŭkt′* [*re*, again, and *instruct*]: to instruct anew.

REINSURE, v. *rē′ĭn-shôr′* [*re*, again, and *insure*]: to insure the same property a second time by other underwriters or in another office. RE′INSU′RANCE, n. a contract in which the first insurer is relieved by another from the risks he had undertaken.

REINTER, v. *rē′ĭn-tėr′* [*re*, again, and *inter*]: to inter anew.

REINTERROGATE, v. *rē′ĭn-tĕr′rō-gāt* [*re*, again, and *interrogate*]: to question again or repeatedly.

REINTRODUCE, v. *rē-ĭn′trō-dūs′* [*re*, again, and *introduce*]: to introduce again. REIN′TRODUC′TION, n. a second introduction.

REINUNDATE, v. *rē′ĭn-ŭn′dāt* [*re*, again, and *inundate*]: to inundate again.

REINVEST, v. *rē′ĭn-vĕst′* [*re*, again, and *invest*]: to invest anew. RE′INVEST′MENT, n. the act of investing anew; a second investment.

REINVESTIGATE, v. *rē′ĭn-vĕs′tĭ-gāt* [*re*, again, and *investigate*]: to investigate again.

REINVIGORATE, v. *rē'ĭn-vĭg'ō-rāt* [*re*, again, and *invigorate*]: to revive; to reanimate.

REINVOLVE, v. *rē'ĭn-vŏlv'* [*re*, again and *involve*]: to involve anew.

REIS, *rēz*, n. plu. of REI. See REI.

REIS, or RAIS, n. *rīs*, or RAS, *răs* [Ar. *reis, raïs*, prince, chief, or head]: a common title over the whole East for various persons in authority, as the *reis*, i.e., captain, of a ship. REIS-EFFENDI, n. *rīs'ĕf-fĕn'dĭ*, in *Turkey*, the title formerly given to the chancellor of the empire, and minister for foreign affairs.

REISSUE, v. *rē-ĭsh'shū* [*re*, again, and *issue*]: to issue a second time: N. a second or repeated issue.

REITERATE, v. *rē'ĭt'ėr-āt* [F. *réitérer*, to reiterate—from L. *re*, again; *itĕrātus*, repeated—from *itĕrum*, again, a second time]: to repeat again and again; to say again that which has already been said. REIT'ERATING, imp. *-ā-tĭng*. REIT'ERATED, pp.: ADJ. repeated again and again. REIT'ERA'TION, n. *-ā'shŭn* [F.—L.]: repetition again and again. REIT'ERA'TEDLY, ad. *-lĭ*, repeatedly.—SYN. of 'reiterate': to repeat; rehearse; recapitulate.

REITERS, n. plu. *rīt'ėrz* [Ger. *reiter*, a rider, a horseman]: the German cavalry of the 14th and 15th c., especially in France during the religious wars.

REJECT, v. *rĕ-jĕkt'* [L. *rejectārĕ*, to throw or cast back—from *re*, back; *jacĭō*, I throw: It. *rigettare:* F. *rejeter*]: to throw away or aside as anything useless or vile; to discard; to decline; to refuse to receive, accept, or grant. REJECT'ING, imp. REJECT'ED, pp. REJECT'ABLE, a. *-ă-bl*, capable of being rejected; worthy to be rejected. REJECT'ER, n. *-ėr*, one who rejects. REJECTION, n. *rĕ-jĕk'-shŭn*, the act of throwing away or casting aside; refusal to accept or grant. REJECT'IVE, a. *-ĭv*, that rejects; tending to reject. REJECT'MENT, n. *-mĕnt*, matter thrown away.—SYN. of 'reject': to dismiss; cast off; refuse; throw aside; repel; slight; renounce; despise; decline; rebuff.

REJECTED ADDRESSES: a famous collection of parodies by the brothers James and Horace Smith, which was issued anonymously in 1812, and met with great success. They were written as a burlesque upon the many prominent and unsuccessful competitors for the reward offered by the management of the Drury Lane for an address to be delivered at the opening of the new theatre. Among the parodies the following are the work of James Smith: *The Baby's Début* (Wordsworth); *The Hampshire Farmer's Address* (Cobbett); *The Rebuilding* (Southey); *Play-House Musings* (Coleridge); *The Theatre* (Crabbe); the first stanza of *Cui Bono* (Lord Byron); the song entitled *Drury Lane Hustings;* and *The Theatrical Alarm-Bell*, an imitation of the Morning Post; also travesties on *Macbeth, George Barnwell*, and *The Stranger*. The rest are by Horace Smith.

REJOICE, v. *rĕ-joys'* [OF. *resjoïr;* F. *réjouir,* to rejoice; *réjouissant,* joyous, gladsome: L. *re,* again; *gaudērĕ,* to rejoice: Sp. *regocijar,* to rejoice (see JOY)]: to experience gladness in a high degree; to be glad; to exult; to delight or gladden. REJOIC'ING, imp.: ADJ. displaying or feeling joy; animating with gladness: N. the act of expressing joy and gladness; the subject or experience of joy. REJOICED', pp. *-joyst'.* REJOIC'ER, n. *-ėr,* one who rejoices. REJOIC'INGLY, ad. *-lĭ.*—SYN. of 'rejoice': to be glad; joy; exult; exhilarate; gladden; delight; triumph; please; cheer.

REJOIN, v. *rē-joyn'* [*re,* again, and *join;* F. *rejoindre,* to rejoin]: to unite after separation; to join company with again; to answer to a reply. REJOIN'ING, imp. REJOINED', pp. *-joynd.* REJOIN'DER, n. *-joyn'dėr,* an answer to a reply; an answer or reply: in *law,* the pleading of a defendant in answer to a plaintiff's replication. The order of pleading is declaration, plea, replication, rejoinder, surrejoinder, rebutter, surrebutter, etc.—each party alternately delivering one of these pleadings.

REJOINT, v. *rē-joynt'* [*re,* again, and *joint*]: to reunite the joints of; to joint anew.

REJOURN, v. *rĕ-jėrn'* [*re,* and *adjourn*]: in *OE.,* to adjourn to another hearing; to readjourn.

REJUDGE, v. *rē-jŭj'* [*re,* again, and *judge*]: to reexamine; to call to a new trial and decision.

REJUVENESCENT, a. *rĕ-jō'vĕn-ĕs'sĕnt* [L. *re,* again, *juvenes'eens,* or *juveneseen'tem,* becoming young again—from *juvĕnis,* a youth]: growing young again. REJU'VENES'CENCE, n. *-ĕs'sĕns,* or REJU'VENES'CENCY, n. *-ĕs'sĕn-sĭ,* a renewing of youth; state of being young again; a term applied to a form of reproduction in plants in which the protoplasm escapes from its old cell-wall and swims away.

REKINDLE, v. *rē-kĭn'dl* [*re,* again, and *kindle*]: to set on fire anew; to rouse again. REKIN'DLING, imp. *-dlĭng.* REKIN'DLED, pp. *-dld.*

RELAIS, n. *rē-lā'* [F.]: in *fort.,* a narrow walk, of four or five ft. in width, left without the rampart to receive the earth which may be washed down, and prevent its falling into the ditch.

RELAND, v. *rē-lănd'* [*re,* again, and *land*]: to put on shore what had been shipped; to go on shore after having embarked.

RELAPSE, v. *rĕ-lăps'* [L. *relapsus,* sunk or fallen back—from *re,* back; *lapsus,* fallen; *labor,* I slide or glide onward: F. *relaps,* relapsed]: to slip or fall back into a former bad state; to fall back from a state of convalescence or recovery: N. a sliding or falling back into a former bad state; a return to any state; in *med.,* the return of a disease after convalescence. RELAPS'ING, imp. RELAPSED, pp. *-lăpst':* ADJ. in the *R. Cath. Chh.,* applied to a heretic who falls back into an error which he had abjured. RELAPS'ER, n. *-ėr,* one who relapses.

RELAPS'ING FEVER: an infectious recurrent fever, called by numerous names in various localities; e.g., Biliary Remittent, Bilious Typhoid, Dynamic Fever, Epidemic Remittent, Gastrohepatic, Recurrent, Relapsing Bilious, Remitting Icteric, Seven-day fever, Short fever, Spirillum fever. Of these names the last is most definite, as indicating the cause—the presence in the blood of a spirillum (*Spirochæte Obermeieri*) 1/1500 to 1/500 in. long.

Relapsing fever usually begins suddenly with rigors, a sense of chilliness, and frontal headache. Febrile reaction soon sets in; the tongue is coated with thick moist whitish fur; there are pains in the head, back, and limbs, constipation or slight diarrhea; and the skin is often yellow as in jaundice (a phenomenon never seen in typhus or typhoid fever). By the fifth or sixth day, there is sometimes delirium. After the above-described symptoms have lasted five to seven days, a sudden change takes place, beginning with a copious perspiration, followed by rapid fall of the temperature and pulse to their healthy level (or even lower), and the patient appears nearly well. But from the fifth to the eighth day of this seeming convalescence, a sudden relapse occurs, and all the primary symptoms return; these run a rather shorter course than before, and again terminate in sweating and in a second convalescence, which is in most cases permanent, though relapses may occur three or even four times. In relapsing fever enlargement of the spleen is frequent. Death is a rare termination of this fever; the mortality is reported at 2 to 4 per cent.

There is not much to do in the way of treatment. The bowels should be opened at the beginning of the attack; and if necessary, kept open subsequently with castor-oil or saline aperients. The headache may be relieved by the usual remedies, which the physician will prescribe according to the patient's state. The vomiting may sometimes be checked by effervescing draughts.

RELATE, v. *rĕ-lāt'* [L. *relātus*, repeated, reported—from *re*, back, and *latum*, to carry]: to report; to rehearse; to give particulars, either orally or in writing; to ally by connection or kindred; to have reference or respect to; to refer to; in *OE.*, to bring back; to restore. RELA'TING, imp. RELA'TED, pp.: ADJ. allied by kindred; connected by blood. RELA'TER or RELA'TOR, n. *-lā'tẽr*, one who relates. RELA'TION, n. *-lā'shŭn* [F.—L.]: act of telling; narrative; account; respect; reference; connection between things; connection by birth or marriage; kindred; a person connected by birth or marriage; direct conformity of parts to a whole and to each other. RELA'TIONSHIP, n. *-shĭp*, state of being connected by birth or marriage, or other alliance. RELA'TIONAL, a. *-ăl*, having relation or kindred. RELA'TIONALLY, ad. *-lĭ.*—SYN. of 'relate': to tell; recite; narrate; detail; report; rehearse; recount; describe;—of 'relation':

respect; reference; regard; connection; kindred; alliance; kinsman; kinswoman; consanguinity; affinity; narrative; tale; account; recital; narration; rehearsal; detail; description.

RELATIVE, a. *rĕl'ă-tĭv* [F. *relatif*, relative—from L. *relativus*, referring, relative: It. *relativo* (see RELATE)]: respecting; having reference to; pertinent; relevant; not absolute or existing by itself; incident to man in society, as rights or duties; in *OE.*, positive; close in connection; particular: N. one connected or allied by blood or affinity; that which has relation to something else; in *gram.*, one of the words *who, which, that*, so named because they relate or refer to some word or words going before (see RELATIVE PRONOUNS). REL'ATIVELY, ad. *-lĭ*, with respect to something else; not absolutely. REL'ATIVENESS, n. *-nĕs*, the state of being relative or bearing relation. RELATIV'ITY, n. *-ĭ-tĭ*, the state of being relative. RELATIVE RANK: see RANK IN THE UNITED STATES ARMY AND NAVY. RELATIVE TERMS, in *logic*, terms which imply relation, as servant and master, husband and wife.

REL'ATIVE KEYS, in Music: the keys most nearly related to any key whose scales have the greater number of their notes in common with it. The keys most nearly related to a major key, taken as principal, and into which it may most easily pass, are its *dominant*, or fifth above; its *subdominant*, or fifth below—each of which differs from it by only one sharp or one flat—and its *relative minor* key (the key which has the same signature) is in its descending scale the same, the ascending scale differing by two notes. In the same way, the keys most nearly related to a minor key are its *dominant* and *subdominant*, and its *relative major*. Thus the relative keys of C major, as principal key, are G major, F major, and A minor; and the relative keys of A minor are E minor, D minor, and C major. A more remote relationship subsists between a major key and the dominant and subdominant of its relative minor; or between a minor key and the dominant and subdominant of its relative major. A major key is also closely connected with its tonic minor, or the minor key of the same tonic, as the two keys have the tonic, dominant, and subdominant in common.

REL'ATIVE PRO'NOUNS: pronouns differing from personal and other Pronouns (q.v.) in this, that, besides standing for nouns, they at the same time have the power of conjunctions. They join sentences or clauses by *relating*, or referring back directly, to something just named. The relatives in English are *who, which*, and *that*. *What* is used for *that which*, thus embracing both relative and antecedent. In many cases, *who* or *which* can be resolved into a conjunction and a personal pronoun; e.g., 'At last the surgeon was called in, *who* (=*and he*) straightway amputated the limb.' 'Why consult Charles, who (=*for*, or *since he*) knows nothing of the matter?' 'Ahab seized the vineyard of Naboth, *which* (= *although—it*) he had no title to.' In cases where they are not thus resolvable, they introduce

sentences or clauses to limit nouns, the relative clause serving the purpose of an adjective; e.g., 'He picked out all the men *who had blue eyes*' (=*the blue-eyed*). 'The house *which stands* (=*situated*) half-way up the hill is the most cheerful.' Relative clauses of this kind may often be omitted without detracting from the meaning of the sentence, and with positive gain in conciseness; e.g., in the last example 'which stands' or 'situated' may be omitted.

Who is employed when the reference is to persons, and *which* when it is to inferior animals or things. *That* is applied to both persons and things; but it does not follow that it may be used at pleasure instead of *who* or *which*. Whenever a *who* or *which* is resolvable as above described, the substitution of *that* would alter the meaning; e.g., in one of the examples above, it would make the sentence declare that Ahab seized the particular one of Naboth's vineyards to which he had not a title; implying that he had a title to some other vineyard or vineyards of Naboth. Though some recent authorities favor a more general use of *that*, the rule most in vogue is that *that* is to be applied only when the purpose of the relative clause is to limit or define the thing meant. Undoubtedly, for this purpose, its use is in general preferable to the use of *who* or *which*. It is easier and more idiomatic to say: 'All the men that had blue eyes,' than, 'All the men *who*,' etc. Besides, *that* so employed often avoids ambiguities that would attend *who* or *which;* e g., 'His conduct surprised his English friends, *who* had not known him long.' This may mean either that his English friends generally were surprised, for the reason that they had not known him long; or that only a portion of them—those, namely, that had not known him long—were surprised. If the latter is the meaning intended, it would remove all ambiguity to write: 'His English friends *that* had not known him long.'

The use of the demonstrative *that* as a relative is common to the Teutonic languages, but is unknown in Greek, and Latin, and in the Romanic languages. The relatives proper (and the many derivatives and compounds formed from them) in all the allied languages begin with *k*, or an equivalent of *k* (*qv*, *hv*, *hw* = *wh*, *w*, *h*). Skr. *kas*, Gr. *kōs* or *pōs* (how), Lat. *quis*, *qui*, Pol. *kto*, Goth. *hvas*, Ger. *wer*, Dan. *hvi* (pron. *vi*). Eng. *who*, *how*, Fr. *qui*, It. *chi*.

The relatives proper are used also (sometimes with a slight variation of form) to ask questions, when they are called Interrogatives.

RELAX, v. *rĕ-lăks'* [L. *relaxārĕ*, to relax, to unbend—from *re*, back; *laxo*, I loose or slacken—from *laxus*, loose: F. *relâcher:* It. *relassare*]: to loosen; to make less rigid or tense, as sinews or strings; to make less rigorous or strict; to mitigate, to relieve from close attention; to unbend; to grow slack or feeble, as in study or efforts; to abate in severity in *OE.*, to open; to loose. RELAX'ING, imp.: ADJ. tending to relax or weaken, as climate. RELAXED', pp. *-lăkst'*. RELAXATION, n. *rē'lăks-ā'shŭn* [F.—L.]: the act of slackening or remitting tension; the act of recreating one's self; recreation; abatement of rigor or severity, as of

the law; an opening or looseness: in *med.*, a lessening of the normal and healthy tone of the body. RELAXATIVE, a. *rĕ-lăks'ă-tĭv*, having the quality of relaxing.—SYN. of 'relax': to slacken; remit; release; ease; divert; be remiss; loose; abate; mitigate; unbend; recreate.

RELAY, n. *rē-lā'* [F. *relais*, a relay: It. *rilasso*, a relay of horses: F. *relayer*, to relieve another by undertaking his task—from L. *re*, again; OF. *layer*, to discontinue, to stop: Goth. *letan*, to allow: or perhaps connected with L. *laxārĕ*, to loosen (see RELAX)]: a supply of fresh horses in readiness to relieve others, that the traveller may proceed without delay; a supply of dogs at certain points for the pursuit of game; a device in telegraphy for sending on the current with fresh strength.

RELAY, v. *rē-lā'* [*re*, and *lay*]: to lay again or a second time.

RELEASE, v. *rĕ-lēs'* [OF. *relaisser*, to relinquish; F. *laisse*, a string, a leash—from mid. L. *laxa*, a string loosely held: L. *laxus*, loose: It. *rilasciare*, to release, to set at liberty (see RELAX)]: to set free from restraint or suffering of any kind; to let go; to free from obligation or penalty: N. a setting free from any claim, obligation, pain, or restraint; in *law*, discharge of some interest in land or of some legal right; also discharge of all demands or rights of action concerning a particular matter (see QUITCLAIM): acquittance. RELEAS'ING, imp. RELEASED', pp. *-lēst'*. RELEAS'ER, n. *-ẽr*, one who releases. RELEASE'MENT, n. *-mĕnt*, the act of releasing from restraint or obligation.—SYN. of 'release, v.': to quit; let go; relax; slacken; free; liberate; discharge; loose.

RELEGATE, v. *rĕl'ĕ-gāt* [L. *relegātus*, banished—from *re*, back or again; *legārĕ*, to send with a legal commission]: to dispatch; to send into exile; to banish. REL'EGATING, imp. REL'EGATED, pp. REL'EGA'TION, n. *-gā'shŭn*, exile; judicial banishment.

RELENT, v. *rĕ-lĕnt'* [L. *relentes'cĕrĕ*, to grow slack again—from *re*, again; *lentesco*, I become pliant; *lentus*, pliant: F. *ralentir*; It. *rallentare*, to slacken]: to become less rigid or hard; to become more mild and tender; to feel compassion; in *OE.*, to slacken; to remit; dissolve: N. in *OE.*, stay; remission. RELENT'ING, imp.: N. the act of becoming mild or tender; the growing less intense. RELENT'ED, pp. RELENT'LESS, a. *-lĕs*, destitute of pity or compassion; unmerciful; unforgiving; cruel. RELENT'LESSLY, ad. *-lĭ*. RELENT'LESSNESS, n. *-nĕs*, the quality of being unmoved by pity. RELENT'MENT, n. *-mĕnt*, the act of relenting; pity; compassion.—SYN. of 'relent': to soften; give; melt; mollify.

RELESSEE, n. *rē'lĕs-sē'* [*re*, again, and *lessee*]: the person in whose favor a re-lease is executed. RE'LESSOR', n. *-sŏr'*, the person who executes a re-lease.

RELET, v. *rē-lĕt'* [*re*, again, and *let*]: to let again, as a house.

RELEVANT, a. *rĕl'ĕ-vănt* [L. *rel'ĕvans* or *relĕvan'tem*, lifting or raising up, relieving; *relevārĕ*, to lighten—from *re*, again; *lĕvō*, I make light: F. *relevant*, raising again: It. *rilevante*, important, material]: applicable; pertinent; suitable. REL'EVANCE, n. *-văns*, or REL'EVANCY, n. *-văn-sĭ*, state of being relevant: in *Scotch law*, sufficient to support the cause.—An objection to the relevancy, corresponding somewhat to a *demurrer*, in other systems.

RELIABLE, a. *rĕ-lī'ă-bl* [*re*, back or again, and *liable*—(see RELY)]: that may be relied on or trusted; trustworthy. RELI'ABLY, ad. *-blĭ*. RELI'ABLENESS, n. *-bl-nĕs*, the state or quality of being reliable. RELI'ANCE, n. *-ăns*, trust; confidence; dependence. RELI'ANT, a. *-ănt*, confident; trusting.

RELIC, n. *rĕl'ĭk* [L. *relictus*, left behind; *relĭquĭæ*, remains—from *re*, back or again; *linquo*, I leave or forsake: It. *reliquia:* F. *relique*]: that which is left after the loss or decay of the rest. REL'ICS, n. plu. *-ĭks*, the body of a deceased person, or part of it, also the garments or parts of them; anything preserved in remembrance: see RELICS, ETC., below.

REL'ICS, in Theological and Historical Nomenclature: memorial objects having some connection, direct or indirect, with the persons of those now departed from this life who were eminent for sanctity or for services. Under the same name are classed certain objects believed to be memorials of the life of the Lord Jesus on earth, especially of his passion and death. R. of the distinguished dead have at all times and in all states of society, however rude, been held in honor. But the question as to R. is important in relation chiefly to Christian history, in which the name is restricted to a single class of such memorials, viz., to objects which derive their value from their connection with the Lord Jesus and with the saints; e.g., fragments of Christ's cross or crown of thorns; portions of the dust, the bones, the blood, the instruments of torture, the chains, etc., of the martyrs; mortal remains, clothes, books, and other objects of personal use of the other saints; and even objects to which a certain indirect sacred interest is given by their being brought into contact with the direct memorials of the distinguished dead; e.g., by their being placed on the tombs of the martyrs, touched with the relics, or blessed at the shrine or sanctuary of the saints, etc. In all such cases, the motive of religious honor, however differently it arises, is the same, viz., the association of the object which is honored with the personage whose virtues or services are the subject of grateful veneration. The merits of R. in their theological aspect, are beyond the scope of this publication. We confine ourselves to an outline of the history of the veneration of R., and to a statement of the conflicting views of rival Christian communions on the subject.

The earliest monuments of Christian history contain evidences of the deep and reverential affection with which martyrs of the faith, their mortal remains, and everything connected with their martyrdom, were regarded by their fellow-Christians; for which reverence Rom. Catholics pro-

fess to find warrant in many passages of the Old and New Test.; e.g., Ex. xiii. 19; Deut. xxxiv. 6; II K. xiii. 21, and xxiii. 16–18; Is. xi. 10; Matt. ix. 20–22; Acts v. 12–16, and xix. 11, 12. The contemporary letter of the Church of Smyrna attests this plainly as to the martyrdom of Polycarp; Pontian's *Life of Cyprian* tells of their stealing the martyr's body, and carrying it away by night in holy triumph with lights and torches. At an early period, too, miracles are described as connected with relics. Thus Ambrose (Ep. xxii. 1, 2) tells of a blind man's sight restored by his touching the bodies of the martyrs Gervasius and Protasius; and similar wonders are detailed by Gregory Nazianzen (*Orat.* xviii.), Chrysostom (*In S. Ignatium*, n. 5), Leo the Great (*Serm.* iv. 4); insomuch that the possession of R. of the martyrs, and even the occasional touching of them, was regarded as a special happiness (Gregory Naz. *Orat. in S. Theodorum*), and that not merely individuals, but, according to Theodoret the historian, even cities were content to share with each other portions of the sacred treasure (Theodoret, *Græc. Affectionum Curatio*, disp. viii.). Connected with this feeling, too, is found a belief of a certain sacred efficacy in the presence or the touch of the R.; especially there is ascribed by Chrysostom, Basil, Theodoret, and other Fathers, to prayers offered before the R. a virtue in dispelling or warding off sickness, diabolical machinations, and other evils. Hence we find that altars were erected over the tombs of the martyrs, or at least that R. were invariably placed on the altars, wherever erected, insomuch that the Trullan Council ordered the demolition of all altars in which no R. had been deposited. Far more sacred than the R. of martyrs, was the cross of the Lord Jesus, which was believed to have been discovered at Jerusalem by Helena (q.v.), mother of Emperor Constantine. Minute portions of the wood were distributed to the principal churches; and Cyril of Jerusalem, within less than a century after the discovery of the cross, describes the precious wood as dispersed throughout the world. It must be added, too, that even at this early period, many abuses and superstitions had crept in, which even the Fathers who admit the worship do not fail to condemn.

The practice of venerating R., however, and the feeling on which it was founded, were not suffered to pass without a protest. Vigilantius, in a treatise now lost, but whose tenor is learned from his adversary, Jerome, reprobated in the strongest terms the excesses to which it was carried, and indeed the essential principles on which the practice rests. But the protest fell without drawing an echo from the contemporary mind. Vigilantius had so few followers, that were it not for the refutation composed by Jerome of his work against R., we should have no record of his opposition to the popular view; and it is urged by Rom. Catholics, as a proof of the universal acquiescence of the church of the 4th c. in the practice of venerating R., that in an age remarkable for intellectual activity and for polemic ardor—an age which in 25 years saw nearly 30 councils in reference to the Pelagian heresy—it was not even

found necessary to call a single council to condemn Vigilantius.

The writings of Augustine, of Paulinus of Nola, of Ephrem the Syrian, of Gregory the Great, and others, are full of examples of the miraculous virtue ascribed to R., and of the variety and the extensive multiplication of sacred memorials of all kinds. Nor was this confined to the orthodox alone; all the different parties in the controversy on the Incarnation agreed with Rom. Catholics and with one another on this subject; and even the Iconoclasts, at the very time that they most fiercely repudiated the use of images, admitted without difficulty the veneration of relics.

In the age of the Crusades, fresh impulse was given to this practice in the West, by the novelty and variety of the sacred objects brought home from the churches of Syria, Asia Minor, and Constantinople by crusaders, by palmers returning from Palestine, and by the Latin conquerors of Constantinople; and it is admitted by the most zealous Rom. Catholics, that at this period many false, and perhaps even absurd and ridiculous R. were introduced, and were successfully commended to the veneration of individuals or invididual churches in the West; nor do they venture to doubt that abuse and superstition found their way side by side with what they regard as the genuine and authorized religious veneration. Nevertheless, except with the Waldenses, Wycliffe, and a few isolated individuals, the practice remained unchallenged till the 16th c., when, in common with many other doctrines and practices of the Church of Rome, it was utterly repudiated by the Reformers. Rom. Catholics, however, allege that the practice, as sanctioned by the church, has nothing in common with the abuses which form the main ground of the objections alleged by Protestants. The Rom. Cath. use of R., as authorized by the church, is to serve as incentives to faith and piety, by recalling vividly to men's mind the lives, and, as it were, the corporeal presence and the earthly converse of the saints. and thus placing before men, in a more touching manner, the virtues which, in the examples, are held up for imitation. The decree of the Council of Trent connects this subject of R. veneration with the question of the veneration of the saints, and regards the R. of the saints not as possessing intrinsic virtue, but only as instruments 'through which God bestows benefits on men': see Invocation of Saints.

The Greek and other oriental churches, and most of the oriental sects, agree with Rom. Catholics in the practice of honoring R. of saints.

On the other hand, the Reformed churches, without exception, have rejected the usage as unscriptural, tending by its nature to withdraw from the worship of the one God, and further deformed by numerous superstitions. They regard a large proportion of the R. which Rom. Catholics venerate as false and supposititious; and they specify several, regarding whose spuriousness even learned Rom. Catholics appear assured. Some R. have been

the subject of much controversy among Rom. Catholics themselves: see HOLY COAT: HOLY PLACES: LORETO PILGRIM. It may be added that the practice of venerating R. forms a notable feature of the Mohammedan usage of pilgrimages. The holy cities of Mecca and Medina, and the celebrated Mosque of Omar at Jerusalem, owe most of their holiness in Mohammedan eyes, to the memorials of the Prophet, and other R. which they contain; and the celebrated *Sanjak-sherif* or Sacred Standard at Constantinople, is believed to be formed of the nether garment of Mohammed. The practice occupies a still more important place in Buddhism (q.v.—see also CEYLON).

RELICT, n. *rèl'ĭkt* [L. *relictus*, left behind—from *re*, back or again; *linquo*, I leave: OF. *rélicte*, a widow]: a woman whose husband is dead; a widow. RELICTED, a. *rĕ-lĭkt'ĕd*, in *law*, left bare, as land by the receding water. RELIC'TION, n. *-shŭn*, land left bare by water.

RELIED: see under RELY.

RELIEF, n. *rĕ-lēf'* [F. *relief*, relief—from L. *relevārĕ*, to lighten, to raise or lift up—from *re*, back or again; *lèvō*, I make light: It. *rilevare;* F. *relever*, to raise again]:

High Relief.

removal in whole or in part of any evil, grievance, or affliction; that which mitigates; help; succor; remedy; release of a sentinel from his post; in the *feudal law*, a payment made to the lord by the tenant or vassal on coming

Low Relief.

into possession of an estate to be held under him: in *fort.*, the projection or prominence of a work above the ground-plan; in the *fine arts*, the appearance of projection in painting; in *sculp.*, the projection of figures from the ground or plane on which they are formed, being of three kinds—ALTO-RELIEVO, or high relief; MEZZO-RELIEVO, medium or demi-

relief; Basso-relievo, or low relief (see Alto-rilievo: Sculpture: see also Relievo). Relief-valve, in a *steam-engine*, a valve through which the water escapes into the hot well when shut off from the boiler. Relieve, v. *rĕ-lēv′*, to set free in whole or in part, as from any pain of body or distress of mind, or any evil; to mitigate; to alleviate; to help; to succor; to release, as from a post or duty. Reliev′ing, imp.: Adj. abating the violence of, as pain or distress; serving or tending to relieve. Relieved, pp. *rĕ-lēvd′*. Relievable, a. *rĕ-lēv′ă-bl*, capable of being relieved. Reliev′er, n. *-ėr*, one who or that which relieves. Relieving-officer, in *England*, an officer under a poor-law board, to whom paupers apply for assistance, and who inquires into the facts of their situation, visiting their abodes, relieving cases of urgent need, and keeping a register of cases.—Syn. of 'relief': mitigation; assistance; redress; alleviation; help; aid; indemnification; remedy; succor;—of 'relieve': to succor; assist; free; remedy; indemnify; remove; assuage; alleviate; help; support; ease; mitigate; sustain; diminish; lighten; redress.

RELIEF CHURCH: see United Presbyterian Church.

RELIEVO, n. *rĕ-lē′vō* [It.]: see under Relief. *Note.*—Relievo is the usual but erroneous spelling for Rilievo.

RELIGHT, v. *rē-līt′* [*re*, again, and *light*]: to light anew; to rekindle.

RELIGIEUX, n. *rā-lēzh″i-ė* [F.—from L. *religĭōsus*, fearing the gods, devout (see Religion)]: a monk; a friar. Relig′ieuse, n. *-ėz*, a nun.

RELIGION, n. *rĕ-lĭj′ŭn* [F. *religion*—from L. *religĭōnem*, reverence for the gods, piety—from *re*, again; *ligō*, I bind: derived by others from L. *relegĕrĕ*, to go over again in thought—from *re*, again; *legĕrĕ*, to read: It. *religione*, religion]: that obligation or sense of duty which rests on the minds of men, arising from the felt relation in which they stand to an almighty power; belief in God, with a sincere desire to do His will; godliness; any system of faith or worship; religious rites. Reli′gionless, a. *-lĕs*, without religion. Reli′gionist, n. *-ĭst*, one who talks much on religious subjects, but has little devotional feeling; a sectarian bigot. Reli′gionism, n. *-ĭzm*, adherence to religion, or practice of it; appearance of religion. Reli′gious, a. *-ŭs* [L. *religĭōsus*, pious, devout]: of or relating to religion; loving and obeying God; pious, devout; bound by vows; teaching or containing religion: N. one bound by monastic vows; a monk; a nun. Reli′giously, ad. *-lĭ*, piously; reverently; with strict observance. Reli′giousness, n. *-nĕs*, the quality or state of being religious. Religious orders (see Monachism).—Syn. of 'religious': godly; devout; devotional; pious; holy; strict; rigid; exact; conscientious.

RELIGION: man's sense of relation to mental beings other than man, i.e. to gods or God, also, a system of

beliefs, doctrines, and rites. These two must be distinguished from each other. The former—R. of personal character, R. in its psychological aspect, or subjectively considered—is specially in the province of the philosophy of R.; while the various forms of faith, historically and objectively treated, constitute the field of comparative religion. But though these branches are to be distinguished, neither can be fairly treated apart from the other; and both are included under the Science of Religion.

The inquiries which collectively constitute the Philosophy of R. have been prosecuted zealously since Kant gave new life to philosophical speculation; but since then, as before, conclusions have widely differed as to what is the essence of R. as a factor in human thought and character. By some, R. has been regarded as identical with morality; others have treated it as mainly, if not solely, intellectual adhesion to a certain body of dogmas; while its emotional nature has seldom lacked assertors. It is evident that the philosophical definition of the essence of R. will take hue and shape from the definer's own practical experience, or at least from his own actual observation, of what R. is and does.

Kant made R. a moral development, and defined it as 'the recognition of all our duties as divine commands,' as of eternal obligation, and not as merely imposed by authority or custom. Fichte denied the practical character of R., and identified it, at least in some of his writings, with a higher form of speculative knowledge, 'which makes man clear to himself, and answers the highest questions that can be asked.' Elsewhere in Fichte, it is the recognition of God as manifested in us. Schleiermacher, one of the greatest names in the history of modern theology and religious speculation, expressly denied that R. was either theoretical knowledge or practical, ethical activity, or any mixture of these, and relegated it to the sphere of feeling of emotion. His most famous definition, more one-sided than his view of R. ultimately was, made it consist in our consciousness of absolute dependence on something which, though it determines us, we cannot determine in turn. Hegel, protesting vehemently against this view, proclaimed R. to be perfect freedom; and taught that, passing through various stages, it is finally the divine spirit becoming conscious of himself through the finite spirit—again an intellectual process. Comte glorified R., the R. of humanity, as reverence for and worship of the spirit of mankind. Feuerbach degraded R. to a result of self-love and egoism.

R., on its subjective side, is doubtless in its essence mainly of the nature of emotion; but it is not merely emotion. In it are combined awe, reverence, hope, fear, love; but these feelings point to an object which in all developed religions is the unseen, the infinite, God, who is a Spirit. With the feelings cardinal to the existence of R. are accordingly bound up certain beliefs as to the being and character of God, our relation to Him and His relation to the world and history, views of the nature of the soul, of the creation of

man, of Divine providence. Also, there are associated with these beliefs modes of worship, or forms of ritual for expressing man's reverence. Thus R., as piety, faith, connects itself with creed and ritual, and assumes objective shape as a system of doctrine, in adhesion to which multitudes may unite. Beliefs reverently and confidently cherished react on practical life, and become a guide to conduct. R., accordingly, influences man as intellectual, ethical, and emotional, and if really cherished, has a correspondingly deep hold on his life.

As above noted, the definitions of R. may be very various. To the Christian disciple, R. in its essence is the following of God by a man—as the child trusts, obeys, and imitates its father; and if occasion required an enlargement of this rudimentary definition it would be in this general direction—that this trustful and loving obedience arises in man in view of some manifestation which God has made of Himself in human history and within man's own soul, through His Son Jesus the Christ, and by His Holy Spirit. This definition, though evidently framed in view of the Christian R., is yet capable of application essentially to the R. of any devout soul—even of a conscientious pagan if seeking light, and meanwhile acting according to such outward or inward light of God as he may possess.

Origin and Growth of Religion and Religious Systems.—R. is as old as human history or human language; and there is good reason for saying that it is universal, though there are and have been individual atheists and communities with little sense of religion. The temperament of certain races renders them more highly susceptible of profound religious impressions than others, and more open to religious impulses, just as some individuals have a deeper fund of religious feeling, of piety, and reverence, than their neighbors.

Most of the great religions profess to have been directly revealed to man by inspiration from God; and are thus miraculously communicated to man, who has only to hear, understand, and obey. Thus man himself contributes nothing to the religious system, which may, however, be revealed to him only by degrees, and be apprehended fully only by the remote descendants of those to whom its first truths were made known. The revelation may be completed within a certain period (as Protestants generally hold of their faith), or there may be a measure of permanent and progressive revelation (as Rom. Catholics believe).

On the other hand, many inquirers seek the origin of R. within man himself; and it is claimed that it is not necessary that those who do so should deny the truth of all religions, or reject belief in an almighty and infinite God. Acceptance of a naturalistic theory of the *growth* of R. in man may not necessarily imply negation of the supernatural; on the other hand, acceptance of the supernatural view may not necessarily, declare that truths as to God naturally developed are therefore not truths. Still it is not evident what is gained for truth by excluding God from the origin of any of the higher activities of man's soul;

nor indeed is it yet proved that such exclusion is possible if God be the source of men.

It has been usual to regard the very lowest form of R. as the beginning of any and every R., or of all religions save that of the theorizer. Thus *fetichism* would be the original root of all or most religions, and be followed by the various forms of polytheism, lower and higher. Nature worship is an earlier form of belief than that in which the gods are regarded as persons with minds, wills, characters, perchance bodies, more or less like those of men. The richest mythologies belong to this anthropomorphic stage. From some polytheistic creeds, again, monotheistic faiths have sprung. Comte alleges that all knowledge has passed through three stages: one religious or theological, in which unseen causes are regarded as divine; then a philosophical stage; then the final or positive one.

On the other hand, careful investigators of old faiths such as Max Müller, not only assert that no R. consists of fetichism only, but hold fetichism to be not a primary, but a degraded form of faith; for there certainly is retrogression in R. at certain times among certain peoples, as well as development. Guided by the old Indian faith and its records, Max Müller teaches that R., which he regards as the faculty (or the exercise of the faculty) for apprehension of the infinite, was never entirely sensuous. Man, by the use of his senses, was brought into contact with incalculable powers and was moved to awe by the non-finite, the infinite. This infinite power he saw first—not in tangible objects, as stones, shells, etc.—but in what Müller calls semi-tangible, e.g. mountains, trees, rivers; and later, in wholly intangible objects, as the sky, the stars, the sun, the moon, the dawn. From worshiping such powers of nature, men came later to worship invisible deities, manifesting various powers. Ideas of law, virtue, infinitude, and immortality were awakened. The belief in *Devas*, or single supreme beings, which Müller calls *Henotheism*, led naturally to belief in some one God presiding over the other gods, now no longer regarded as supreme, to *Polytheism;* or to something like *Monotheism*, a belief in one God, excluding the possibility of other gods. In some, the disbelief in the many gods led to atheism; or in others, to Buddhism. This development, Max Müller thinks, is well marked in the thought of India. Among other races the growth of belief has doubtless been to a greater or less extent different; but the case of India is, for various reasons, specially suggestive.

The Faiths of the World.—The principal creeds and forms of faith are separately treated in this work: the more important titles are here noted for further reference. On the non-Christian religions, ancient as well as modern, there are the relevant paragraphs under the titles Assyria, Egypt, India, Japan, etc.; independent titles—Vedas, Sanskrit Literature, Sikhs, Jainas, Zoroaster, Zend Avesta, Parsees; Roman Religion, Greek Religion; Scandinavian Mythology; Buddhism; Confucius; Lao-tsze; Mohammedanism,

etc. For Christian systems—Christianity; Roman Catholic Church; Greek Church; Anglo-Catholic Church; Congregationalism; Presbyterianism; Episcopacy; Lutherans; Church of Scotland; Baptists; Methodists; Universalists; Unitarians; and many other titles referred to in these or suggested by them. See also GOD: CHRIST: HOLY SPIRIT: REVELATION: INSPIRATION: BIBLE: CHURCH: ETC.—The relation to Christianity of Mormons, Shakers, and followers of Joanna Southcott, is debated. Subjects of religious speculation are presented under such titles as Fetichism, Anthropomorphism, Pantheism, Materialism, Secularism, Myth and Mythology.—The numerical relations of the adherents of the several faiths in various countries is indicated, when possible, in the article on each country.

The following is a morphological classification of religions (from *Encyc. Britannica*, 9th ed.):

I. NATURE RELIGIONS.

(*a*) Polydemonistic Magical Religions under the control of Animism (q. v.).

To this class belong the religions of the so called savages or uncivilized peoples.

(*b*) Purified or organized Magical Religions.

Therianthropic Polytheism.

1. *Unorganized.*

Japanese Kami-no Michi.
The non Aryan (Dravidian) religions of India, principally in the Deccan.
Religion of the Finns and Ehsts.
The old Arabic religions.
Old Pelasgic religion.
Old Italiote religions.
Etruscan religion before its admixture with Greek elements (?).
The old Slavonic religions.

2. *Organized.*

The semi-civilized religions of America: Maya, Natchez, Toltecs-Aztecs, Muyscas, Incas in Peru.
The ancient religion of the Chinese Empire.
Ancient Babylonian (Chaldæan) religion.
Religion of Egypt.

(*c*) Worship of manlike but superhuman and semi-ethical beings.

Anthropomorphic Polytheism.

The anc. Vaidic (Vedic) religion (India).
The pre-Zarathustrian Iranic religion (Bactria, Media, Persia).
The younger Babylonian and Assyrian religion.
The religions of the other civilized Semites (Phœnicia, Canaan, Aramæa, a, Sabæans in s. Arabia).
The Celtic, Germanic, Hellenic, and Græco-Roman religions.

II. ETHICAL RELIGIONS.

(*a*) National Nomistic (Nomothetic) religious communities.
Taoism and Confucianism in China.
Brahmanism, with its various anc. and modern sects.
Jainism and primitive Buddhism.
Mazdaism (Zarathustrianism), with its sects.
Mosaism.
Judaism.

(*b*) Universalistic religious communities.

Islam, Buddhism, Christianity.

A considerable discrepancy is found in the estimates by recognized authorities of the number of believers in the different creeds of the world, but the following is the most general accepted estimate (1906): Christianity 477,080,158; Buddhism, 147,900,000; Mohammedanism, 176,834,732; Hindooism, 190,000,000; Confucianism, 256,-

000,000; Shintoism, 14,000,000; Judaism, 7,186,000; Taoism, 43,000,000; Polytheism, 117,681,669.

RELIGIOUS DIVISIONS OF EUROPE.

Countries.	Catholic Church.	Protestant Ch's.	Greek Church.	Jews.	Mohammedans.
Russia	9,600,000	3,400,000	73,310,000	3,400,000	3,000,000
Germany	17,100,000	29,478,000	.....	590,000	.....
Austria-Hungary	31,100,000	3,900,000	3,100,000	1,700,000	.....
France	35,387,000	580,000	.....	49,000	.....
United Kingdom	6,500,000	30,100,000	.....	100,000	.....
Italy	29,850,000	62,000	.....	38,000	.....
Spain	16,850,000	29,000	.....	5,000	.....
Belgium	5,880,000	15,000	.....	3,000	.....
Roumania	100,000	15,000	4,800,000	400,000	30,000
Ottoman Empire	320,000	11,000	1,700,000	60,000	2,708,000
Netherlands	1,545,000	2,756,000	.....	83,000	.....
Portugal	4,300,000	.....	.....	.....	.....
Sweden	1,000	4,698,000	.....	2,000	.....
Switzerland	1,172,000	1,710,000	.....	8,000	.....
Denmark	3,000	2,089,000	.....	4,000	.....
Greece	10,000	10,000	1 930,000	5,000	45,000
Servia	6,000	1,000	1,973,000	5,000	15,000
Bulgaria	29,000	.....	1,393,000	.....	571,000
Norway	1,000	1,958,000	.....	.....	.....
Roumelia	30,000	.....	700,000	4,000	240,000
Montenegro	5,000	.....	290,000	.....	.....
Luxemburg	200,000	.....	.....	.....	.....
Malta	160,000	.....	.....	.....	.....
Gibraltar	16,000	.....	.....	.....	.....
Total	160,165,000	80,812,000	89,196,000	6,456,000	6,629,000

In the U. S. there are (1906) 137 Christian sects, besides the non-Christian groups, such as the Jews, the Mormons, the Theosophists, etc. Most of these sects are included in the leading denominations, the Adventists, Baptists, Catholics, Congregationalists, Disciples of Christ, Friends (or Quakers), Lutherans, Mennonites, Methodists, Presbyterians, Protestant Episcopal, Reformed Church, Unitarians and Universalists. Of these the Catholics have the greatest number of adherents, 10,915,25 including Roman Catholics, the Russian and Greek churches, and other Catholic sects, the Roman Catholics alone numbering 10,785,496. The Baptists have 4,974,047, the Congregationalists 687,042, the Disciples of Christ, 1,235,294; the Lutherans, 1,841,346; the Methodists 6,429,815; the Presbyterians 1,723,871; the Protestant Episcopal 827,127; the Reformed Church 405,022; the Unitarians 71,000; and the Universalists, 53,041. Of other sects the Christian Scientists have 71,114 adherents, the Salvation Army 28,500; and the Christian Catholic Church (Dowie's), 40,000. The American Jewish Year Book for 1900 estimates the number of the Jewish race in the U. S. at 1,058,-135, but the number of Jews actively affiliated with the Orthodox and Reformed synagogues is considerably less. The Mormons number 344,247, and the Theosophists, 2,663. There are also 47 Chinese temples in the U. S.

RELIGIOUS ART.

RELIGIOUS ART: the union of Religion and Art finds a development in practically all races, and a not too delayed one; for aspiration and sense of beauty are almost instinctive. The worshipful tendency in man which submits him to some more than human power as an object to be adored, served, and propitiated, ranges from fetishism through idolatry, ancestor worship, polytheism, or the divinization of man, and abstract dualism of a controlling good and bad spirit, up to the Christian cult of one pure Supreme Being. The Art developed under Christianity, though generically included under Religious Art, and, like other forms, exhibiting phases and modifications due to race, environment, influence or period, is apart from, and superior to them by reason of the higher ideals which dominate it. There is, moreover, no art which Christianity has not employed with distinction in its worship, and in the variety and profusion of such productions of a religious character, not a few may be regarded as exemplars in their respective fields, especially in architecture and painting. For this reason Christian Art demands special consideration, and will not be treated under the present head. See PAINTING; RENAISSANCE PAINTING; ROMAN CATACOMBS.

'The first impulse to art is much the same, whenever or wherever it is felt in a race,' says Lübke in his *History of Art*. Naturally, these initial movements are of the most primitive character. Among relics of the Cave Dwellers are bowls with animals scratched or carved on them. Animal-worship is a rudimentary stage of religion.

The oldest monuments, those of Egypt, are architectural, and sculpture and painting were, as a rule, subsidiary to this art. Painting in its full accomplishment is the latest of those arts. Among the older races, the Egyptians rank more prominently for the blending of Art and Religion, both as to antiquity, development and monumental survival, while the Hellenic Greeks were the most conspicuous and exquisite exponents of Religious Art of all the pagan races. Sculpture became for the first time an ideal art in Greece. Sculpture in Assyria, as well as painting, was mainly for the glorification of the monarchs. In Egypt, while religious and monumental, it was singularly conventional, its stereotyped figures showing scarcely any advance for centuries. This was undoubtedly due to sacerdotal restraint. Greece, which had borrowed much in her art from both these countries, shook off the narrow restrictions which fettered it in them, and forged ahead into an exquisite independent style, distinctively her own. The highest expression of it was Religion: for the temples of the gods, and statues of the gods and goddesses themselves, were the worthiest objects of artistic emprice. True, the divinities that the Greek chisel drew from the marble were but ideal forms of human beauty invested with suggestion of moral attributes of the loftiest natural conception.

RELIGIOUS ART.

This Art blended with Religion reached its acme in Greece, in the 5th century before Christ, the age of Pericles. The school of Phidias selected as some of its most inspired themes the divinities of the people for whom they worked. Pallas Athena, sprung from the brain of Jove, Goddess of Intellect, as tutelary divinity of Athens, was naturally one of the most compelling inspirations of the sculptor's art. Nine statues of her were carved by Phidias, the master creator of that splendid art period. Sophocles, 'great and pure genius,' took devotedness, ennobled by the accomplishment of a great duty, as theme of predilection for his dramas. The exalted scope of the dramatists inspired sculptors and architects with their dignified and glowing conceptions. The severe but exquisite beauty of the chaste Athena was the sculptural embodiment of the Art Spirit of that glorious epoch, the ideal impersonation of contained strength and wisdom; just as the chryselephantine statue of Zeus for the Temple of Olympia, likewise the work of Phidias, was crystallization of the national idea of the Supreme God, a divinely human type of masculine perfection.

No people ever reveled more in the joy of living than the Greeks, and the wine that inebriated them was Beauty and Religion. But if the gods were the theoretical object of their worship, the passion for Beauty, which led for the first time to the evolution of the Ideal in Art was probably a more constraining cult. Deities peopled his land to a Greek. In gratitude for the exhilaration which was aroused within him as the physical world poured through the portals of his vision, he returned thanks to the gods who ruled the earth, the sea, the sky, by erecting to them temples in which material, mass, line, and proportion blended into a dream of structural beauty, and by bodying forth in marble the human form with every physical and ethical grace possible to Man, and giving to them names of the gods.

Egypt was antipodal to Greece in its religious art. The mythology of the region of the Nile was a blend centuries old. The sombre shade of death was its characteristic, as life was that of the Greeks. The Egyptian temple was massive, heavy, and provocative of chastened feeling. The Greek temple appealed more to the spectator looking at it from without than to him who beheld its interior, and the severe Doric style was succeeded by the greater ornateness of the Ionic and the Corinthian. The Egyptian temple, like the Indian, consisted of a cluster of different parts enclosing a small sacred shrine in which reposed the god. There is no high ideal feeling in symbolic religious portrayal. The gods are distinguished from humans in the Egyptian paintings by different heads of animals and by the dress they wore. These animals were hieroglyphic signs of their names. Thus Thoth had the head of an ibis; Anubis, that of a dog; Hathor, that of a cow; the goddess of Neith, that

of a lioness, and so on. The dress of the gods resembled the short ancient undress of women, and they had a special beard, longer by 2 in. than that of mortals, and turned up at the end. They are not living things like the Greek gods, but merely important symbols. The ancient mythology of Egypt supposed gods. A symbol of Horus, a great sun-disk with widespread colored wings, was sculptured over the doors of the temples to drive away unclean spirits.

Painting with the Egyptians was only a kind of picture-writing, although interesting as decoration. Even subjects that seem secular and domestic had affiliation with religion which they would lack in another race. Agriculture was to be practiced, for instance, in Elysian fields after death. The colors employed were black, green, red, yellow, blue, brown, and white. The colors employed for the pictured gods were vivid red, green, yellow, or blue. Religious, historical, and domestic themes were treated with considerable uniformity. The worship of the dead, rites of burial, weighing the departed soul in scales, transportation of mummies in funeral barges, the king offering gifts to the god, are some of the religious subjects. A painted chronicle, that is the note of Egyptian Art.

The religious art of Egypt is inferior to that of Greece not only because of its being symbolic, restricted, sombre, and heavy, but because the idea of divinity with the Egyptians, in Art, at least, was not anthropomorphic. Their gods had animal heads. A god, therefore, was non-human and monstrous in this respect, just as the hundred-armed god of the Buddhists is in Indian Art. Symbolism does not lend itself to idealism: hence its lack of development. The art of Greece and Egypt, however, affords the two most significant examples of religious art among the nations of antiquity. Roman art, borrowed from the Greek, and although it created no ideal forms in Art which were original, it produced sculpture only second to Grecian, either the work of Greek artists after the subjugation of Greece by the Romans, or imitation of Greek ideals by Roman sculptors. Sculpture as an accessory to architecture and in portraiture was carried to much perfection under the Roman emperors who succeeded Augustus. In the Arch of Titus, erected as a memorial of the conquest of Jerusalem, there was represented a procession carrying away the spoils of the Temple, including the Ark, and the seven-branched candlestick. Although this is not religious art, for it only commemorates an Imperial victory, yet it is mentioned as interesting that the two art products of the Jews which were most sacred should thus be exhibited as a note of the triumph expressed in a monument to the glory of a pagan emperor. Cameo-cutting and bas-reliefs on sarcophagi were artistic productions finely ex-

ecuted, in the decline of the Roman Empire, when the arts had also declined.

The religious art of the other nations of antiquity was inferior to the manifestations of it already recorded. There is no sculpture or painting of an early date in Chaldæa or Babylon, though Chaldæan traditions have been the foundation of the arts of western Asia. They worshipped heavenly bodies and the temples were also observatories. Phœnician Art is a mixture of Assyrian and Egyptian. In Assyrian art there are winged figures of bulls with bearded human heads. There are no traces of Median art. The religion of the Persians was based on a dualism of essentially moral character. The Kingdom of Light or Ormuzd, Goodness, is opposed to the Kingdom of Ahriman or Darkness. In Persian art the King is represented worshipping Ormuzd, the God of Light, with Ferouher, or Wisdom, over his head, as a man with the wings and tail of a bird. The stone altars on the mountain tops are the chief monuments of Persian religious art, though it was really the followers of Zoroaster who venerated fire as a symbol of the Deity, Ormuzd.

Religious art in India appears to have begun with Asoka, who adopted Buddhism, and was the Buddhist Constantine. Buddhist architecture is the oldest style, and it embraces monasteries hewn out of the solid rock; high memorial mounds, or Topes; Pagodas, detached buildings surrounded by a series of walls, and Mosques, built by Mohammedan conquerors who brought their own style with them and combined with it native ornamentation. In the very first period Indian art attained a distinctive style, which was employed in religious monuments. The Brahminical sects adopted it and later it was transformed by profane ornamentation. The founder of Buddhism, Gotama Sakyasinha, reformed the old Hindu pantheism, Brahmanism. He is represented seated on the sacred lotos which is supported by the avatar of Sakya, the lion. There is some similarity between the Buddhist temples and those of Christianity. Rows of pillars separate the nave from the aisles, and a small dagoba, or shrine, rises at the end of the cave (the temples were originally monasteries cut from the rock) in which is the seated image of Buddha. This is where the altar would be in a Christian church. The Mosques are the most remarkable of all the Indian buildings.

Mohammedan religious art has peculiar restrictions and yet quite a distinct character. 'Images,' it is said in the Koran, 'are things to be held in abhorrence.' Tradition also ascribes to Mohammed's oral utterances this one: 'Woe unto him who paints the likeness of a living thing: on the Day of Judgment those whom he has depicted will rise up out of the grave and ask him for their souls. Then, verily, unable to make the work of his hands live, will he be consumed in everlasting flames.'

With figures thus barred, the art of the East is mainly decorative. All races alike begin with surface decoration, whether wall painting, glass painting or tapestry. But the evolution of Western art led to the treatment of a flat surface in a way to remove the sense of flatness. Color is only a means in painting that has reached a developed state, but it remains an end in itself for the East which regards it as an ornament, and the Oriental feels no need of anything in art that transcends ornament. Arab predilection for this, and the exclusion of animal forms, lead to designs in which geometrical figures, vegetable forms, and letters or sentences from the Koran are the elements. With sculpture banned as to its principal object, and only flat ornament of conventional design, there is not much to be said for Mohammedan religious art in sculpture and painting. The same color effects are found in secular and in sacred buildings. In the beginning, Mohammedans found that Christian churches served well enough for their religious rites. The earliest mosques were built by Christian architects. Almost every new style of architecture is the result of the requirements of a new religion. Gradually, therefore, the Arabesque style of decoration asserted itself, and the horseshoe arch originated in their architecture. This novelty became and has continued a distinctive feature of Mohammedan Architecture.

Arabian art first acquired a distinctive character and a settled style in Egypt, but Saracenic Art touched its highest beauty in Spain. Everywhere lavish color and profuse ornamentation remain its features. When the Mohammedans conquered Constantinople, 1483 A.D., they took Santa Sophia as their model and thereafter their buildings are more or less perfect copies of that work of Justinian. The Mosque of Suleiman II., at Adrianople, is an exact copy in plan and form, though differing in detail. The Mohammedan's chief thought was religion, and he made all the arts subservient to it. The most beautiful Persian and Turkish rugs are prayer-rugs. The Smyrna prayer-rugs have a plain centre, green, blue, yellow, ivory, or red, with the prayer point supported by two columns, from which hangs a lamp. Sometimes, the pillars are omitted and there is a modification of the Tree of Life. Bokhara prayer-rugs have the centre field divided into four sections by a large cross. At the appointed hour for prayer, the devout Mohammedan spreads his prayer-rug with the Mihrab (niche) toward Mecca, and prostrates himself, his head resting on the rug at the point, his hands outstretched. There are small prayer-rugs for the children, and occasionally rugs have two or three niches, as if intended for a family rug. The most exquisite rugs are sent to Mecca as propitiary offerings. The mosque at Meshed is famous for its gorgeous carpets, whose soft, glowing colors harmonize exquisitely with the iridescent effects of the tiled walls.

RELIGIOUS DRAMA. The romantic religious drama has recently found a place on the American and English stage, and such gorgeous scenic productions as *Parsifal, Ben Hur, The Shepherd King,* and *The Prince of India* have attracted attention. Under the influence of Wagner's mighty harmonies we have listened to the romantic story of the *Holy Grail.* In General Wallace's spectacular drama, *Ben Hur,* we have had graphic delineations of Roman and Jewish life in the time of Christ. And in Wright Lorimer's *Shepherd King* there has been a scenic portrayal of the early life of King David. Both in 1875 and in 1881 Tommaso Salvini, the Italian tragedian, visited America, and his presentation of *Saul* was received with enthusiasm. Beside these religious dramas there have been a number of semi-religious plays founded more or less on the biblical narrative or the legendary history of early Christianity, and among them *Quo Vadis, The Sign of the Cross, The Sacrament of Judas,* and *Mary of Magdala.* In the year 1840 there was a short description of the Oberammergau play in the *Art Student* of Munich; in 1860 Dean Stanley gave an interesting criticism of the play in *Macmillan's Magazine;* and in the March number of *Blackwood's Magazine* of 1860 Alexander C. Seller wrote a graphic account of the performance which he had witnessed 10 years ago. This remarkable play was first produced in 1633. It was condemned and suspended by the Church in 1779. It was revived in 1811 and has been reverently performed every 10 years since that time. Tourists have visited the village and witnessed the play, and its production has been probably the cause of the popular revival of the religious drama in the present day.

The history of the religious drama can be traced from the time when in the early ages of Christianity efforts were made by the Church to suppress the Greek and Roman drama. Tertullian (A.D. 160–240) wrote an uncompromising treatise on the subject entitled *De Spectaculis,* in which he held that when Christians vowed at their baptism to renounce the pomps and vanity of the world, they virtually renounced theatre-going. And, he says, that if Christians need 'spectacula' they can find them in the services of the Church. It seems probable that this suggestion, which originated in the mind of the great Christian father, gave both inspiration and encouragement for the production of the religious drama. Chrysostom (A.D. 347–407) attacked the stage with intense vigor. He complains that even at Easter the theatres were thronged and the churches empty. Gregory Nazianzen, Bishop of Constantinople, (A.D. 380) is said to have been the first to authorize the production of a religious, or 'Passion Play,' which was frequently performed in the 4th and 5th centuries. From that time the cultivation of the religious drama

began, and in course of centuries was introduced into France, Germany, and England.

The religious play, in England, has been classified in sections: 'The Mysteries,' 'The Miracles,' and 'The Moralities.'

The 'Mysteries' may be more correctly designated liturgical plays, in which the liturgy of the Church and her fasts and festivals were embellished by dramatic art. The pageant of 'Corpus Christi' was instituted by Pope Urban IV. in 1264. The pageantry of this festival, with priests and friars in their picturesque costumes, and the guilds of the Church in their festive robes, formed a drama in itself. St. Francis Assisi (A.D. 1182–1226) built a manger in the woods at Christmas and presented the nativity of Jesus in living tableaux, with a real baby and a genuine ox and ass. A liturgical drama was also introduced in which there was a solemn lowering of the crucifix and placing it beneath the altar on Good Friday, and then early on Easter morn the cross was raised with anthems of rejoicing.

The 'Miracle' play was the natural outcome of the liturgical drama. It represents incidents in the lives of the saints of the Old and New Testament as well as legendary lives of the saints in different ages of the Church. Mr. Charles Davidson asserts that there were no real miracle plays in England. This statement, however, depends upon what is meant by a miracle play. There are numerous manuscripts in existence which claim to be so designated. One of the earliest productions of this class of play is entitled *The Representation of Adam*. It has three acts: The Fall of Adam, the Murder of Abel, and the Promised Messiah. These were not three scenes in one distinct play, but three acts which occupied three days. The play was performed outside the church, the church being used for robing. In the first act the structure was erected on a platform representing Paradise, draped with silk curtains at such a height that the angels in Paradise were visible from the shoulders. The Saviour is clothed in a dalmatic, Adam wears a red tunic, Eve a robe of white. They both stand before 'The Figure of God,' a term always used for the Almighty. Fragrant flowers are set around and trees with hanging fruit. 'The Figure of God,' after a chant by the choir of heaven, introduces Adam and Eve to the Garden of Eden, and then retires to the church. Adam and Eve walk about in honest delight. Meanwhile demons come on the stage and point to the forbidden fruit. The devil addresses Adam. He fails to tempt him, and with downcast countenance goes to the other side of the stage and holds counsel with the demons. He then with an insinuating manner approaches Eve. Eve, too, is hard to persuade. Eventually she lends an ear

to the tempter, takes the apple and gives it to Adam. After eating the forbidden fruit Adam recognizes his sin and humbles himself. Laying aside his tunic, he appears on the stage in a raiment of fig-leaves, and in dire grief and despair chants a lamentation. 'The figure of God,' wearing a chasuble and stole, enters upon the stage and finds Adam and Eve hiding in a corner. They are driven out of Paradise and a flaming sword is placed on the gate. 'The Figure of God' then returns to the church. Adam comes on the stage with a spade and Eve with a hoe; they till the soil and sow the corn. Meanwhile the devil comes and plants thorns and thistles. Adam and Eve beat themselves with grief and chant a weird lamentation. The devil then comes and puts fetters on the necks of Adam and Eve, and they are drawn across the stage by demons, who snatch them up with great glee and throw them into hell-fire.

The 'Morality' play was less coarse and more dramatic in its character than either the mystery or the miracle play. It taught great truths which the pulpit failed to teach. In England there were certain cities and towns noted for these religious plays, known as 'moralities,' and the reproduction of them was an event of intense local interest. There are now about 200 manuscripts of these 'moralities' in existence, but there are only a few that can be assigned to the 15th century. Their titles are suggestive of their moral character, as for example, *The castle of Perseverance, Mind, Will, and Understanding, The Pride of Life, Nature,* and *Everyman.* Through the laudable exertions of Mr. Ben Greet, American and English audiences have had the privilege of witnessing the morality play *Everyman* in its original simplicity. It runs thus: God's mighty messenger *Death* summons *Everyman* to a long pilgrimage. Entreaties are of no avail. The only favor which *Death* will grant to *Everyman* is that he may take on the journey such friends as are willing to bear him company. He applies first to *Good Friendship,* who is quite ready to follow him on a feast or frolic, but flees at the very mention of death. *Kindred* excuses himself as having cramp in his toe. *Riches* refuses to help him. Only *Good Deeds* is found willing to serve him, but she is crushed and helpless under the weight of *Everyman's* sins. Her sister *Knowledge* guides *Everyman* to sacramental confession, where he is shriven from his guilt. Then it is that *Good Deeds* is able to rise and accompany *Everyman* toward the grave. *Beauty, Strength, Discretion,* and *Five Wits* attend him for a time but they each shudder at the sight of the grave and flee away. Only *Good Deeds* descends with him to the grave and thus gives him a peaceful entrance into the world to come.

Stephen Langton, Archbishop of Canterbury (A.D. 1228), is supposed to have written a religious play

entitled *The Reconciliation of the Heavenly Virtues*, suggested by the words of the 85th Psalm: 'Mercy and Truth are met together, Righteousness and Peace have kissed each other!' These four virtues appear as four sisters, who dispute before the throne of God regarding the fall of Adam. Harmony is restored by the promise of the coming Christ.

The religious play in the middle ages, even at its best, represented a barbaric art unguided and unthought. But the Renaissance raised the curtain and revealed the classic world in its beauty. This gradually put aside the crude religious drama and prepared the way for William Shakespeare and his contemporaries, Burbage, Hemming, Alleyn, Lewin, and Taylor; and, later on, for those plays of Sir William Davenant, whose influence on the English drama is regarded as deplorable.

The origin of the Indian drama was religious. Hindu writers ascribe it to the sage Bhārata, the son of Dushyanta, who was inspired by Brahma. The word Bhārata signifies an actor, and we have here a personification of the drama in Sanscrit literature, which dates from the 3d century before Christ. Among Mohammedans there is the great religious drama or miracle play of Hasam and Husain, which is performed in Persia during the month of Muharram, in which there is the death scene of Husain on the battlefield of Kerbala, a scene which the historian Gibbon says in a distant age and climate will still awaken the sympathy of the coldest reader. It has been rendered into English by the late Sir Lewis Pelly. The religious play was popular in France all through the middle ages. The *Passion Play* was regularly acted at Valenciennes, and it lasted a whole month. In the 13th century the religious drama in France represented religious subjects beyond the limits of scripture. The two most notable plays of that period, now extant, are the *Miracle de Theophile*, by Rutebeuf, and the *Jeu de St. Nicholas*, by Jean Bodel. These plays are religious in sentiment, but profane in treatment.

Among the Buddhists, the religious drama has always been a distinct feature, and in Thibet, at the present time, the dramatic presentations of the Monks of the monasteries in that country are notable features in the religious ceremonies of the Grand Lama. In Japan the drama has been confined to national events and are only religious incidentally.

The English reader can consult the following works: Bates, *English Religious Drama* (New York, 1893); Pollard, *English Miracle Plays* (Oxford, 1890); Wright, *Early Mysteries* (London, 1838); Davidson, *Studies on English Mystery Plays* (New Haven, 1892); *A Collection of English Miracle Plays and Mysteries* (Basel, 1838).

RELIGIOUS LIBERTY.

RELIGIOUS LIBERTY, or LIBERTY OF CONSCIENCE: is the recognition and assertion by the state or government of the right of every man, in the profession of opinion and in the outward forms and requirements of religion, to do or abstain from doing whatever his individual conscience or sense of right suggests. Religious liberty is opposed to the imposition by the state of any arbitrary restrictions upon forms of worship or the propagation of religious opinions, or to the enacting of any binding forms of worship or belief. The principle of religious liberty has come very slowly to be understood. The state of the ancient world in regard to questions of liberty of conscience was somewhat different from that of the modern. Many national religions did not make universal pretensions, and within their limits there was considerable latitude; the worshipper of one god did not necessarily impugn the authority of another. Yet instances of intolerance are to be found, as in the case of Socrates, even in the most liberal states. When Christianity appeared the case was altered, and it speedily drew on itself a treatment different from that which merely national religions had received from the rulers of the world. Christianity early developed within itself sects which did not manifest toward each other a very tolerant spirit; but it was only when the civil power had been gained to its side that these differences could assume the form of open repression and persecution. It was then found that the persecuting spirit could distinguish a church not less than a secular government, and, indeed, that from the constant occupation of the former with religious affairs the danger of persecution from it was much greater than from the most intolerant civil government. In the organization of civil and ecclesiastical government which prevailed from Constantine to the Reformation persecution was in general only limited by dissent, and universal submission to the dominant church became the condition of religious peace throughout Christendom, while religious liberty was unknown.

In Great Britain even civil liberty, jealously maintained, was not understood, by the dominant party at least, to import religious liberty. Active measures of intolerance were adopted against Dissenters in the reign of Queen Anne. Even in the reign of George III. conditions were attached to the toleration of Dissenting preachers. It was not till the 53d year of this reign that Unitarians were included within the benefits of the toleration acts.

Religious liberty was introduced in Prussia by Frederick the Great, but contravened by his immediate successor. The state at present in Prussia, without, perhaps, actually dictating to private individuals, maintains a vigilant control over ecclesiastical organization, the education of the clergy, and all public matters connected with religion, which only do not affect religious liberty if they are strictly confined to state-protected churches.

Joseph II. of Austria found his Protestant subjects sufficiently advanced to be beyond the need of his control, and reserved such persecution as he was disposed to exercise for the Roman Catholics. By his religious reforms he excited a revolt among his Belgian subjects, which was only terminated under his successor. Religious liberty has only been established in Austria during the present reign. Italy first enjoyed the same advantage under Victor Emmanuel II. The government of France, even since the Revolution, has always been of so paternal a character that it is still somewhat doubtful on what foundation the liberties of Frenchmen rest. In Italy the Waldenses were emancipated in that year, 1848, which marks a new era of religious progress throughout Europe. The constitutions granted at that memorable epoch guaranteed the free exercise of divine worship. Since 1870 the Free Italian churches and many others have sprung into life. In Spain religious liberty dates its feeble beginnings from 1869. Concessions are neutralized by certain restrictions, for the constitution of 1876 limits the liberty of those who are not Roman Catholics to worship in private houses.

In Holland and Scandinavia, even with church establishments, perfect religious equality is enjoyed. And by the treaty of Berlin, 1878, the sultan's government was forced to this position, that in no part of the Ottoman empire shall difference of religion be alleged against any person as a ground for exclusion or incapacity as regards the discharge of civil and political rights, admission to the public employments, functions, and honors, or the exercise of the various professions and industries. The outrageous persecutions which have fallen on the Armenians in contravention of this treaty, and which the powers of Europe failed to prevent and punish, are among the burning shames of a century which won many victories for the right of rights.

The area of toleration has been enlarged by the official action of China in granting to the different European nations the right of sending Christian missionaries, not only to the port cities, but to the interior of that vast empire. The Chinese government has given repeated assurance of its belief that the doctrines of Christianity and the practice of them were for good.

America is the great home not so much of toleration as of true liberty. In the United States the government has no authority to interfere with religion. The fullest liberty is possible only where the church and state are separate. From the beginning of our organized national life this separation has prevailed and been the fundamental law and practice of our country. Here the Jews have had freedom and have been treated with a friendliness never elsewhere shown to them. America is the standing reply to those who believe that religion needs the support and guidance of the state.

RELIGIOUS TRACT SOCIETY: society for promotion of religion by publication and circulation of religious tracts and small books. By far the most important Religious Tract Soc. in the world is that of London, founded 1799. There are now, indeed, numerous religious Tract Societies in different parts of the world, comparatively limited in their field of operations; this great Society reckoning many of them as its branches and auxiliaries. The advantage to the cause of religious truth by diffusion of tracts and pamphlets, was thoroughly appreciated at the time of the Reformation, but no society was formed for the purpose. In the 17th c., several traces are found of transient associations for printing and promoting the sale of religious works. The English 'Soc. for Promoting Christian Knowledge, founded 1701, avowed, for one of its objects, 'to disperse, both at home and abroad, Bibles and tracts of religion.' In 1750, was formed in England 'The Society for Promoting Religious Knowledge among the Poor,' not, like the former, confined to the Church of England, but comprising Christians of all denominations, which published many tracts and books. The design of the Religious Tract Soc. of London, originated with George Burder, Congl. minister at Coventry, and among its founders were Rowland Hill, Matthew Wilks, and other eminent ministers. This great institution was founded on occasion of the annual meeting of the London Missionary Soc.

Its beginnings were humble, but it soon expanded, and its operations have extended over all parts of the world. It has printed and distributed books and tracts in 140 languages and dialects. The business of the Soc. is conducted by a committee chosen annually in London, consisting of four ministers, eight laymen, and ten trustees, half the number being members of the Church of England, and the other half Nonconformists. The Soc. has on its catalogue more than 4,000 separate publications for adults and many for children. It publishes *Leisure Hour* and *Sunday at Home*. A Scotch Tract Society, organized 1709, in 1902 showed annual expenditure of $25,000.

The first organization in the United States for publishing and circulating religious tracts and books, was the Meth. Book Concern, and its first book (1789) was Thomas à Kempis's *Imitation of Christ*. The Concern was moved from Philadelphia to New York 1804. A co-ordinate Western Book Concern was established 1820, and became a separate corporation 1840. Its location is at Cincinnati. The last quadrennial report gives for the four years a total of tracts 6,856,500, and 2,171,330 vols., of which the S. School dept. counted about one-half; the German dept. under the western branch sold, during this period, publications to the amount of $500,200, an increase of $78,443. The total sales of the Western Concern for eight years have been, exclusive of sales to depositories, $6,301,897. The net earnings for the same period were $890,880. The sales of both branches, eastern and western, for 1890–1894, aggregated $7,344,390. There is no colporteur system other than that incidental to the

work of the ministry and churches. The Mass. soc. for promotion of Christian knowledge was organized 1803, and did good work in its day.—In 1812 the Religious Tract Soc. of New York was founded, and two years later, the New England Tract Soc., which, changing its name to American Tract Soc., removed from Andover, Mass., to Boston, 1823. In 1825 the American Tract Soc. was organized in New York, to include local societies, and the Boston soc. became auxiliary to it until 1859, when, after the memorable great debates at the May meetings in New York, caused by the elimination of anti-slavery doctrine from books by the New York soc., the Boston branch withdrew: since the extinction of slavery, it has again been merged practically in the Amer. Tract Soc. (New York), but like the Philadelphia branch, retains a corporate existence as inheritor of legacies. The Amer. Tract Soc. began its colporfeur system 1842; the report 1905 gives 81 colporteurs (including 2 students laboring through most of the year), who sold or gave away 90,822 vols.; in 167,372 cases engaged in prayer or Christian exhortation; visited 273,701 families; besides other colportage conducted by agencies abroad for foreign and pagan lands.

The year ending 1905 was one of progress in the publishing department. Despite the fact that it has been necessary to restore a large number of plates destroyed by the fire of February, 1904, one hundred and seven publications in addition to the regular periodicals have been added to the Society's list. These new publications embraced fifteen different languages, 54 being in English, the rest foreign. Of these 25 were volumes and 82 pamphlets, tracts, leaflets, etc.

The total number of separate volumes published at the home office in the eighty years of the Society's existence is 2,198, and of pamphlets, tracts, leaflets, etc., 6,497, making a grand total of 8,695 separate publications, not counting periodicals. Of these volumes the home office has issued 33,106,135 copies, and of the pamphlets, tracts, and leaflets, 451,682,843. The periodical circulation for the year has been 2,858,900, increasing the grand total of circulation of all the Society's periodicals to date to 270,167,968.

The publications at foreign mission stations, which have been published in whole or in part by the Society's grants for this purpose, number 5,243, of which 1,050 are volumes. Of these, 101 tracts and 24 volumes were added to the list during the past year.

The American Baptist Pub. Soc. and the Presbyterian Pub. Board carry on a wide system of tract and book circulation, while other denominations publish religious literature on a more limited scale.

Religious tracts *circulated* gratuitously or at a low cost among those too poor or too little interested to buy them, surely exert a valuable influence for spiritual, moral, and social advancement; but it is to be regretted

that among the immense mass of religious tracts issued in Great Britain and the United States, not a few by their exaggerated and mistaken views, not only of the facts of life but of the teaching of scripture, are liable to hinder the great cause which they are sincerely intended to serve.

RELINQUISH. v. *rĕ-lĭng'kwĭsh* [L. *relinquo*, I leave behind—from *re*, back or again; *linquo*, I leave: It. *relinquere;* OF. *relinquir*, to relinquish; *relinquissant*, relinquishing]: to give up; to leave without the intention of resuming; to forsake; to abandon; to quit; to withdraw from. RELIN'QUISHING, imp. RELIN'QUISHED, pp. *-kwĭsht.* RELIN'QUISHMENT, n. *-mĕnt*, a leaving or quitting without the intention of resuming; abandonment.—SYN. of 'relinquish': to abandon; forsake; desert; resign; leave; quit; forego; renounce; give up; depart from.

RELIQUARY, n. *rĕl'ĭ-kwăr-ĭ* [F. *reliquaire*, a shrine for relics: mid. L. *reliquiārĭum*, a reliquary—from L. *rĕlĭquĭæ*, remains (see RELIC): small chest or casket in which relics are kept. Reliquaries are made of all kinds of materials, such as wood, iron, stone, ivory, silver, etc., and are frequently ornamented with costly jewels. Shrines are of the same description. That of the 'Three Kings,' at Cologne, has jewels valued at $1,200,000.

RELIQUE, n. *rĕl'ĭk* [F.]: a relic—which see.

RELIQUIÆ, n. plu. *rĕ-lĭk'wĭ-ē* [L. *rĕlĭquĭæ*, remains—from *re*, again; *linquo*, I leave]: remains of the dead; in *bot.*, the remains of withered leaves attached to the plant; in *geol.*, all organic remains, whether animal or vegetable; in *med.*, the permanent evidence of past morbid processes

RELIQUIDATE, v. *rē-lĭk'wĭ-dāt* [*re*, again, and *liquidate*]: to liquidate anew. RELIQUIDA'TION, n. a renewed liquidation or adjustment.

RELISH, v. *rĕl'ĭsh* [prov. F. *relicher*, to lick—from L. *re*, again, and OF. *lecher;* F. *lécher*, to lick: Gr. *leichō*, I lick or lap up (see also LICK)]: to have a taste or liking for: to be gratified with the enjoyment or use of; to have a pleasing taste; to give an agreeable flavor to; to like the taste of; in *OE.*, to give pleasure: N. enjoyment of food in taste and flavor; something taken with food to increase the pleasure of eating; that which gives pleasure; the enjoyment given by anything; savor; zest; gusto; in *OE.*, delight given by anything. REL'ISHING, imp.: ADJ. palatable; savory. REL'ISHED, pp. *-ĭsht.* REL'ISHABLE, a. *-ĭsh-ă-bl*, having an agreeable taste.—SYN. of 'relish, n.': taste; flavor; zest; gusto; appetite; liking; delight; savor.

RELIVE, v. *rē-lĭv'* [*re*, again, and *live*]: to live again; to revive; in *OE.*, to bring back to life.

RELOAD, v. *rē-lōd'* [*re*, again, and *load*]: to load anew as a gun. RELOAD'ING, imp. RELOAD'ED, pp.

RELUCTANT, a. *rĕ-lŭk'tănt* [L. *reluc'tans* or *reluctan'tem*, opposing, resisting—from *re*, back or again; *luctor*, I wrestle; *lucta*, a wrestling]: much opposed in heart; unwilling; averse; in *OE.*, struggling against; resisting with violence. RELUC'TANTLY, ad. *-lĭ*. RELUC'TANCE, n. *-tăns*, or RELUC'TANCY, n. *-tăn-sĭ*, the state or quality of being reluctant; aversion of mind.—SYN. of 'reluctant': averse; unwilling; disinclined; loath; backward; coy; repugnant; indisposed; adverse.

RELUME, v. *rē-lōm'*, or RELU'MINE, v. *-lō'mĭn* [L. *re*, again; *lumen*, light: F. *rallumer*, to light again]: to light again; to rekindle. RELU'MING, imp. RELUMED', pp. *-lōmd'*, or RELU'MINING, imp. RELU'MINED, pp. *-mĭnd*.

RELY, v. *rĕ-lī'* [F. *relayer*, to ease another by undertaking his task—from L. *re*, back or again; OF. *layer*, to discontinue]: to rest or repose on; to have full confidence in; to depend on. RELY'ING, imp. RELIED', pp. *-līd'*. RELI'ER, n. *-ẽr*, one who relies. RELI'ABLE, a. *-ă-bl*, that may be depended on: see RELIABLE.—SYN. of 'rely': to depend; repose; trust; confide; lean upon; rest upon.

REMAIN, v. *rĕ-mān'* [Norm. F. *remainer*, to remain—from L. *remanērĕ*, to stay or remain behind—from *re*, back or again; *manĕō*, I stay: It. *rimanere*]: to continue; to be left as not comprised; to be left after; to be left out of a greater number or quantity; to stay; to last or endure; in *OE.*, not to be lost: N. in *OE.*, abode; habitation. REMAIN'ING, imp. REMAINED', pp. *-mānd'*. REMAIN'DER, n. *-dẽr*, that which is left or remains. in *arith.*, the difference; remnant; residue: in *OE.*, remaining survivors; in *law*, an estate limited to lands and tenements after deduction of another estate in the same which shall have determined; distinguished from a reversion in this, that in reversion, the remainder returns to the owner of the estate himself. CONTINGENT REMAINDER, an estate which may or may not ever become vested or enjoyable. REMAINS', n. plu. *-mānz'*, that which is left; a dead body; relics; remnants.—SYN. of 'remain': to rest; tarry; wait; await; abide; last; endure; continue; stay; sojourn; dwell;—of 'remainder': rest; balance; residue; remains; leavings; relics; remnant; refuse.

REMAKE, v. *rē-māk'* [*re*, and *make*]: to make anew.

REMAND, v. *rĕ-mănd'* [OF. *remander*, to send word again: It. *rimandare*, to send back again—from L. *re*, back or again; *mando*, I commit to one's charge]: to send back to custody or to jail an accused person for further examination on a future day: N. the being sent back to prison for further examination; the state or period of being remanded. REMAND'ING, imp. REMAND'ED, pp.

REMANENT, n. *rĕm'ă-nĕnt* [L. *rem'ănens* or *remănen'tem*, remaining (see REMNANT)]: OE. for REMNANT, which see: ADJ. in *OE.*, that remains; remaining. REM'ANENT MAG'NETISM, n. in *magnetism*, a quantity of magnetism retained by a bar of iron after a magnetic current has passed through it. A massive bar of iron retains its magnetism much longer than one formed of soft iron wires.

REMANET, n. *rĕm'ă-nĕt* [L. *rem'ănĕt*, he or it remains]: that which remains over from some past time or arrangement; in *law*, a case for trial which has been postponed to another term; a thing allowed to lie over, to be taken up at some future time.

REMARK, n. *rē-mârk'* [F. *remarque*, remark, observation—from *re*, again; *marquer*, to mark: It. *rimarco*, remark, consequence (see MARK 1)]: notice or observation expressed in words or writing; a comment; silent notice: V. to notice; to observe; to regard; to express in words or writing thoughts about what is seen or heard; to express, as observations; to note in the mind; in *OE.*, to distinguish; point out. REMARK'ING, imp. REMARKED', pp. *-mârkt'*. REMARK'ER, n. *-ẽr*, one who remarks. REMARK'ABLE, a. *-ă-bl*, worthy of particular notice; that may excite wonder; notable; extraordinary; distinguished; famous. REMARK'ABLY, ad. *-ă-blĭ*, in a manner worthy of observation; surprisingly; singularly. REMARK'ABLENESS, n. *-bl-nĕs*, the state of being remarkable.—SYN. of 'remark, n.': observation; note; annotation; comment; notice;—of 'remark, v.': to notice; regard; note; heed; say; observe; point out;—of 'remarkable': noticeable; unusual; rare; famous; renowned; observable; extraordinary; strange; wonderful; notable; distinguished; eminent.

REMARRY, v. *rē-măr'rĭ* [*re*, again, and *marry*]: to marry a second time. REMAR'RIAGE, n. *-rĭj*, a second marriage.

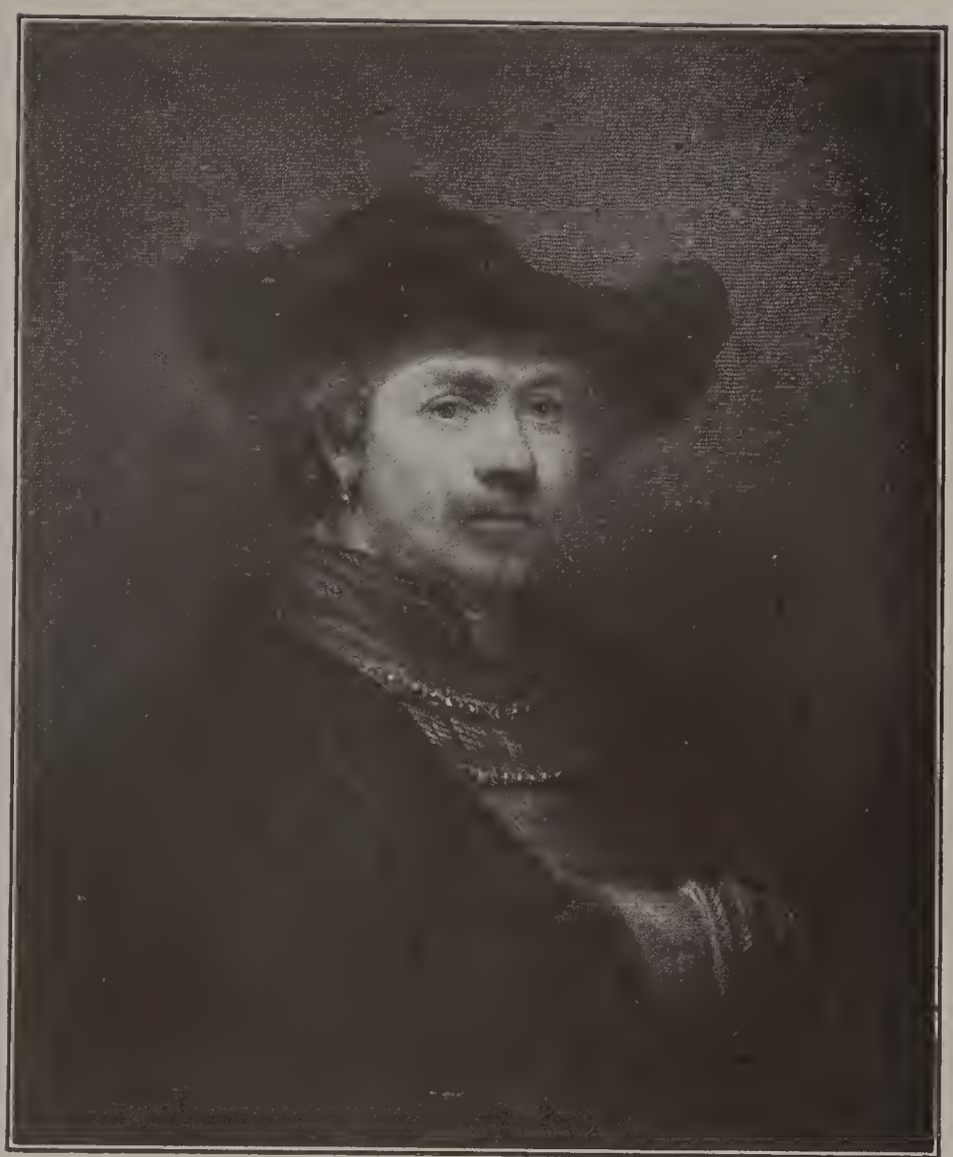
REMAST, v. *rē-mâst'* [*re*, again, and *mast*]: to furnish with masts a second time.

REMASTICATE, v. *rē-măs'tĭ-kāt* [*re*, again, and *masticate*]: to chew over and over.

REMBANG, *rĕm-bâng'*: a residency in Java, having nearly 3,000 sq. m., with extensive forests, containing fine timber, the haunts of wild cattle, swine, and three species of tiger. The products of R. are chiefly cocoa-nuts, coffee, sugar, tobacco, and cotton. Boat-building, fishing, weaving, making earthenware and paper, gold and silver work, are occupations.—R., the cap. (pop. 12,000), is a seaport; it has a govt. school, an institute for girls, and a Prot. church. Pop. of residency 1,120,000, including 16,000 Chinese and 600 Europeans.

REMBLAI, n. *râm-blā'* [F. *remblai*, the working for a bank or causeway; *remblayer*, to embank]: in *fort.*, the mass of earth or rubbish brought to fill up a hollow or to raise a bank—*deblai*, its opposite, denotes the materials excavated; the total height of the top of a parapet above the bottom of the ditch.

REMBRANDT HERMANSZOON, *rĕm'brânt hĕr'mân-zûn* (REMBRANDT HARMENS VAN RIJN): chief painter of the Dutch school, and one of the world's great painters: 1607 (some say 1606, or 8), July 15—1669, Oct.; b. Leyden; son of a miller, Herman Gerritsz van Rhyn, whose house and mill were on an arm of the Rhine at Leyden. Rembrandt (by which name he is usually known) attended for a short time the Latin School at Leyden; and after study-



REMBRANDT.

ing art three years under Jacob van Swanenburg, and for a brief period under Pieter Lastman at Amsterdam, and Jacob Pinas at Haarlem, he returned home, and gave himself to the study of nature. His works now attracted some attention; and about 1630 he was encouraged to establish himself at Amsterdam, where he soon entered on a most successful career, and executed numerous works—portraits, landscapes, historical and *genre* subjects, and those wondrous etchings, numbering more than 360, which almost as much as his paintings have given him fame. R. holds the chief place in the Dutch school; his power and originality are exemplified in almost every branch of his art; and as examples of composition, expression, color, and light and shade, his works rank with those of the greatest artists. He had numerous pupils, many of whom, e.g., Gerard Dow, G. Flinck, F. Bol, N. Maas, P. de Koning, and Vanden Eeckhout, were distinguished artists. R. spent his large gains in indulgence of his taste for works of art, arms, and objects of *vertù*, as is proved by an inventory of his effects, extracted from the registers of the insolvents' court at Amsterdam, for he fell into pecuniary difficulties, partly from his expensive habits, and partly on account of claims by the tutors of his son, after the death of his first wife. He married a second time, and left two children; his son Titus, by his first wife, died before him. The date of his death was long in doubt; but Dr. P. Scheltema, keeper of records at Amsterdam, published 1853 an extract from the register of burials in that city, proving that his interment was in the Westerkerk (West Church) 1669, Oct. 8. Many interesting facts concerning R. were brought to light from old documents, and published, by the same explorer.

The work of R. was one of development through several stages, as in the case of other great painters. From his 16th to his 25th year he was busy in making many studies in color or etching from the most characteristic persons observed in actual life around him; also in experiments on his own features in every variety of expression. His first portraits were hard, elaborate, cold, and well studied in effects of light and shade. After he went to Amsterdam, where his superiority was immediately recognized, his first great picture was his *Lesson in Anatomy* (1632, not the one of the same theme 1656), containing a number of portraits; the color is quiet, the execution painstaking, but the light and shade are bold. In some single portraits, also, of this period, he lifted this special art above its ordinary plane; e.g., his picture of his friend Coppenol (afterward the subject of two of his famous etchings), and the *Shipbuilder*, 1633. After his marriage, 1634, to the sumptuously beautiful Saskia van Ulenburgh, she was his favorite sitter not only in portraiture but in such character pieces as *Queen Artemisia*, *Bathsheba*, etc. At this time appeared some of his first examples of broad free 'handling,' and of warm, glowing color. His women, as in his noted compositions representing scenes in the life of Samson, and of Susannah, are more of the Netherland than of the spiritual type

but the well developed animal phase of beauty seemed to have been the female ideal of many of the old masters. One of his most famous nude subjects is *Danæ* (1636), now at St. Petersburg. But, in the *Tobit* (now in Brussels), restored to sight while in the arms of his wife, there is pathetic sentiment; in the *Flight of the Angel* (1637) to be seen in the Louvre, the family of Tobit express profound awe; and in the *Christ as the Gardener* (1638), belonging to Buckingham Palace, there is no lack of high conception. From 1640 to 54 he was in the zenith of his power as a harmonious and rich colorist, while attaining to great sobriety and truth of expression and action, as in his *Manoah* (1641). At this time he painted the superior portrait, the *Gilder*, now owned in the United States, and one of his own most magnificent portraits, owned by the Brit. National Gallery. In 1642 he produced a picture notable for the number of its life-size figures full of impetuous action, the *Night Watch*, representing guardsmen. After he lost his wife, the same year, it is thought that his grief found expression in a number of pathetic scenes from the life of the Holy Family and of Christ, such as the carpenter's shop at Nazareth, the *Woman Taken in Adultery*, the *Good Samaritan*, the *Pilgrims at Emmaus*, in all which there is a befitting lofty sentiment; the personality of Christ is majestic and divine. In 1656, after his bankruptcy, he achieved some of his finest works, e.g., as *John the Baptist Preaching* and *Jacob Blessing the Sons of Joseph*, less brilliant in color but masterly in *technique*. Among his last and best pictures were the *Jewish Bride*, and the *Family Group of Brunswick*. His famous etchings include *Christ Healing the Sick*, the *Death of the Virgin*, *Christ Preaching*, etc. He painted also animals and landscapes to some extent and with skill. In a loan collection in the Metropolitan Museum of Art (New York) were exhibited recently three fine portraits by R., and the *Adoration of the Shepherds*, similar to one in the Brit. National Gallery.

REMEASURE, v. *rē-mĕzh'ûr:* to measure again.

REMEDIAL, REMEDILESS, etc.: see under REMEDY.

REMEDY, n. *rĕm'ĕ-dĭ* [L. *remĕdĭum*, a cure or remedy —from *re*, again; *medĕor*, I heal: It. *rimedio;* F. *remède*, a remedy]: that which cures a disease or restores health; a cure; a reparation; that which counteracts or repairs an evil of any kind; relief; redress: V. to cure; to heal; to remove or repair an evil of any kind. REM'EDYING, imp. REM'EDIED, pp. *-dĭd.* REMEDIABLE, a. *rĕ-mē'dĭ-ă-bl,* that may be removed or cured. REME'DIABLY, ad. *-blĭ.* REME'DIABLENESS, n. *-bl-nĕs.* REME'DIAL, a. *-ăl,* tending to remedy or remove. REME'DIALLY, ad. *-lĭ.* REMEDIATE, a. *rĕ-mē'dĭ-āt,* in *OE.*, medicinal; affording a remedy. REMEDILESS, a. *rĕm'ĕ-dĭ-lĕs,* not admitting a cure; incurable. REM'EDILESSLY, ad. *-lĭ.* REM'EDILESSNESS, n. *-nĕs,* the state of being without remedy.—SYN. of 'remedy, n.': cure; help; assistance; restorative; counteraction; relief; reparation; redress; aid; medicine;—of 'remediless': incurable; irretrievable; irreparable; cureless; irremediable; irrecoverable; desperate.

REMELT, v. *rē-mĕlt':* to melt a second time.

REMEMBER, v. *rĕ-mĕm'bėr* [OF. *remembrer,* to remember—from L. *re,* back; *memŏrārĕ,* to make mindful of; *memor,* mindful: It. *rimembrare,* to remember]: to bring back to the memory; to recollect, to retain in the mind or memory; to bear in mind; not to forget; in *OE.,* to put in mind. REMEM'BERING, imp. REMEM'BERED, pp. *-bėrd.* REMEM'BERER, n. *-bėr-ėr,* one who remembers. REMEM'BRANCE, n. *-brăns,* the act or power of remembering; retention or revival in the mind or memory (see MEMORY); a token by which to keep in memory; memorial; in *OE.,* honorable memory; notice of something absent; admonition; memorandum; note to help memory. REMEM'BRANCER, n. *-brăn-sėr,* one who or that which reminds or recalls to memory; a recorder; one of certain officers of the court of exchequer, and of some corporations, as of the city of London.—SYN. of 'remembrance': memory; recollection; reminiscence; memorial; token.

REMENSNYDER, *rĕm'ĕn-snī'dėr,* JUNIUS BENJAMIN, D.D., LL.D.: American Lutheran clergyman: b. Staunton, Va., 1843, Feb. 24. He was graduated from Pennsylvania College, Gettysburg, in 1861 and from its theological department in 1865. He served in the Union army in 1862-3, was ordained in 1865 and has held important pastorates at Philadelphia, Savannah, and New York, and originated the movement which resulted in the adoption of a common service ritual in all American Lutheran churches. He has published: *Heavenward* (1874); *Doom Eternal* (1880); *Six Days of Creation* (1886); *Lutheran Manual* (1892); *The Atonement and Modern Thought* (1905); etc.

REMENYI, *rĕm'in-yē,* EDUARD: violinist: b. Moskolc, Hungary, 1830; d. San Francisco, Cal., 1898, May 15. He studied under Joseph Böhm at the Vienna Conservatoire, participated in the Hungarian revolution 1848; became acquainted with Franz Liszt, who gave him valuable assistance, went to London 1854, and became solo violinist to the queen; was pardoned and returned to Hungary 1860, and became violinist to the emperor of Austria. He first visited the United States 1877, and was favorably received in New York and elsewhere. In the following season he made a tour of the west, and 1891-2 played in Canada. He possessed a high technical mastery of his instrument, but was often betrayed into exaggeration that marred the artistic effects of his playing.

REMERCIE, or REMERCY, v. *rĕ-mėr'sĭ* [F. *remercier,* to thank]: in *OE.,* to thank. REMER'CYING, imp. REMER'CIED, pp. *-sĭd.*

REMEY, *rā'mĭ,* GEORGE COLLIER: American naval officer: b. Burlington, Iowa, 1841, Aug. 10. He was graduated from the United States Naval Academy in 1859 and entered the navy and served with distinction on the Union side during the civil war. When the war with Spain broke out he was placed in command of the naval

base at Key West, Fla., and subsequently became commandant of the navy yard at Portsmouth, N. H. He was promoted rear-admiral in 1898, and in 1900 was given command of the Asiatic Station at Yokohama, and in this capacity directing the operation of the United States naval forces in China. He was retired in 1903, Aug.

REMIGES, n. plu. *rĕm'ĭ-jēz* [L. *remĭgēs,* rowers; *remĭgo,* I row, I glide through the air—from *rēmus,* an oar]: the large quills of the wings of birds.

REMIGIUS, *rē-mĭj'ĭ-ŭs* (or REMEDIUS, or REMI, or REMY), SAINT: about 438—probably 533, Jan. 13; b. Laon, Picardy; of noble family; for 53 years Bishop of Rheims. He was appointed to the bishopric against his will, at the early age of 22; and his episcopate is memorable for the conversion of King Clovis, who was baptized by Remigius 496. It was on occasion of this ceremony that, contrasting our Lord and His cross with the idols whom Clovis had hitherto adored, Remigius used the words which afterward became almost epigrammatic: 'Adore henceforward what thou hast hitherto burned, and burn that which thou hast adored.' Remigius lived to see Gaul almost entirely Christianized. Some of his letters are preserved in the *Bibliotheca Petrum,* as also two documents under the title of *Testamenta,* the genuineness of which has been the subject of a curious controversy. Consult: Migne, *Patrologia Latina,* Vol. LXV. (which contains some of the bishop's letters); Aubert, *Vie de Saint Remi* (1849).

REMIND, v. *rĕ-mīnd'* [*re,* again, and *mind*]: to cause to remember; to bring to notice. REMIND'ING, imp. REMIND'ED, pp. REMIND'ER, n. *-ẽr,* one who or that which reminds.

REM'INGTON, FREDERIC: American artist: b. Canton, N. Y., Oct. 4, 1861. He studied at the Yale Art School and the Art Students' League, New York, and later went west where, as cowboy and stockman on a ranch, he gathered the material that has made him a success in scenes of frontier life. He has contributed frequently to the leading magazines and periodicals scenes of western military and Indian life, and also events of the Cuban war of 1897-8. Few illustrators draw the horse with so much character and life-likeness. He has produced several sculptures such as *The Broncho Buster* and *The Wounded Bunkie.* As author and illustrator he has produced *Pony Tracks* (1895); *Crooked Trails* (1898); *Frontier Sketches;* and a novel, *John Ermine of the Yellowstone* (1902).

REMINGTON, PHILO: American inventor: b. Litchfield, N. Y., Oct. 31, 1816; d. Silver Springs, Fla., April 5, 1889. He entered the small-arms factory of his father at Ilion, N. Y., and for 25 years was superintendent of the mechanical department. The perfecting of the Remington breech-loading rifles and of the Remington type-

writer was mainly due to him. In 1886 he withdrew into private life and in that year Wyckoff, Seamans & Benedict bought out the Remington interest in the typewriter, and an assignment having been made, took charge of the Ilion plant. In 1888 the main plant passed to Hartley & Graham, who operated it as the Remington Arms Company.

REMINGTONITE, n. *rĕm'ĭng-ton-īt* [after Edward *Remington* of Maryland]: a mineral occurring as a rose-colored incrustation on serpentine at Finksburg, Md., supposed to be a hydrated carbonate of cobalt.

REMINISCENCE, n. *rĕm'ĭ-nĭs'sĕns* [F. *réminiscence,* reminiscence—from L. *reminiscen'tĭă*—from *remĭnis'cor,* I recall to mind]: the recalling to the mind, or the revival in the memory, of ideas or impressions formerly received but forgotten; a statement of what one recollects or remembers. A philosophical doctrine found in the writings of Plato and elsewhere that the soul having existed in previous states occasionally recalls those earlier experiences.

REMIPED, n. *rĕm'ĭ-pĕd* [L. *rēmus,* an oar; *pes* or *pĕdem,* a foot]: an aquatic animal whose feet serve as oars.

REMISE, v. *rĕ-mīz'* [F. *remise,* delivery, remittance: L. *remissus,* sent back—from *re,* back or again; *missus,* sent: *mitto,* I send]: in *law,* to give or grant back; to resign a claim by deed: N. in *law,* a surrender; a release, as of a claim. REMIS'ING, imp. REMISED', pp. *-mīzd'*.

REMISS, a. *rĕ-mĭs'* [L. *remissus,* slack, negligent—from *re,* back or again; *missus,* sent; *mitto,* I send: Sp. *remiso,* careless: It. *rimesso,* flagging]: careless; negligent; not attending to duty or engagements; slow; dilatory. REMISS'LY, ad. *-lĭ,* carelessly; negligently; not vigorously; not with ardor or eagerness. REMISS'NESS, n. *-nĕs,* the state of being remiss; want of attention to business or duty; negligence. REMIS'SIBLE, a. *-sĭ-bl* [F.—L.]: that may be remitted or forgiven. REMISSION, n. *rĕ-mĭsh'ŭn* [F.—L.]: abatement; release; cessation of intenseness; pardon; forgiveness; the sending of money to a distant place. REMIS'SIVE, a. *-sĭv,* remitting; forgiving. REMISSIO INJURIÆ [L. forgiveness of an injury]: in *Scotch law,* plea in answer in an action of divorce for adultery (see CONDONATION).—SYN. of 'remiss': slack; dilatory; careless; inattentive; heedless; slothful; negligent; neglectful; thoughtless;—of 'remissness': carelessness; negligence; coldness; inattention;—of 'remission': abatement; relaxation; moderation; release; pardon; forgiveness.

REMIT, v. *rĕ-mĭt'* [L. *remitto,* I loosen, I resign—from *re,* back; *mitto,* I send: It. *rimettere:* F. *remettre*]: to relax; to slacken; to surrender the right of punishment in whole or in part; to pardon; to absolve; to grow less violent; to transmit to another at a distance, as money, bills, etc. REMIT'TING, imp. REMIT'TED, pp. RE-

MIT'TER, n. *-ẽr*, one who remits. REMIT'MENT, n. *-mĕnt*, forgiveness. REMIT'TAL, n. *-ăl*, a giving up; surrender. REMIT'TANCE, n. *-ăns*, the sending of moneys, bills, etc., to a person at a distant place; the sum, bill, etc., remitted. REMIT'TENT, a. *-ĕnt*, ceasing, applied to diseases whose symptoms alternately diminish and return.—SYN. of 'remit': to relax; release; forgive; pardon; give up; resign; defer; refer; abate; relinquish; absolve.

REMIT'TENT FEVER: a variety of malarial fever, usually caused by the estivo-autumnal parasite (see MALARIA).

The characteristic lesions of remittent fever are the presence of dark pigment granules in the blood and several organs of the body, as the spleen, liver, brain, spinal cord, and the marrow of the bones. This constitutes the *bronzed condition*, and is sometimes called *melanosis* of an organ, and *melanæmia* when relating to the blood. The liver is in most cases enlarged, but when the disease is of long duration it may become atrophied. The pigment granules are found both in the interlobular tissue and in the lobules. The spleen is enlarged. The mucous membrane of the stomach is often subacutely inflamed, and there is frequent enlargement of the mucous follicles of the duodenum. Softening of the muscular walls of the heart also has been observed.

The attack begins usually with a chill, followed by a hot stage. Giddiness followed by delirium is not infrequent. There is pain, often severe, in the epigastric region, caused principally by subacute inflammation of the mucous membrane of the stomach, and perhaps by engorgement of the liver. There is almost always violent vomiting, the ejected matter often being streaked with blood, and containing more or less bile, a circumstance which caused the disease formerly to be called bilious remittent fever. In mild cases a remission will take place in six or seven hours; but in severe cases the paroxysm of fever may last 30, or even 48 hours. During the remission the pulse falls in frequency, the skin usually becomes moist, the patient is comparatively comfortable and may have refreshing sleep. At the end of the remission another chill may occur, but it is often absent or very slight, and the febrile movement is renewed. During the chill at the commencement the temperature of the body is actually raised, as shown by the thermometer in the axilla, but in the hot stage the temperature rises from 2° to 8°, and even more, above the range in health. A series of remissions may follow, corresponding more or less to the intermissions in intermittent fever.

The treatment in simple remittent fever consists to a great extent, in the administration of sulphate of quinine, the quantity being adapted to the character of the paroxysms and the remissions, and to the constitution and age of the patient, but in severe cases stimulants and other sustaining remedies may be urgently needed.

REMIX, v. *rē-mĭks'* [*re*, again, and *mix*]: to mix again or repeatedly.

REMNANT, n. *rĕm'nănt* [a contr. of OE. *remanent;* OF. *remanent, remenant*, that which remains: L. *rem'ănens* or *remănen'tem*, remaining or staying behind—from *re*, back; *manĕō*, I remain: It. *rimanente*, a remnant]: the part which is left; residue; that which is left of a piece of cloth, etc.—Syn.: remainder; remains; residue; rest; overplus.

REMODEL, v. *rē-mŏd'ĕl* [*re*, again, and *model*]: to model or fashion anew. Remod'elling, imp. Remod'elled, pp.

REMOLD, v. *rē-mōld':* to mold or shape anew.

REMONETIZE, v. *rē-mŭn'ĕt-īz* [L. *re*, again; *monēta*, the mint, money (see Money)]: to restore payments in specie—that is, to make acceptance of payments in paper voluntary which was formerly obligatory; to restore bullion as alone the standard money of account. Remon'etizing, imp. Remon'etized, pp. *-ĕt-īzd.* Remon'etiza'tion, n. *-ĕt-īz-ā'shŭn*, the restoration of bullion as the standard money of account, instead of paper, its fictitious representative only.

REMONSTRATE, v. *rĕ-mŏn'strāt* [L. *re*, back or again; *monstrāre*, to show: F. *remontrer*, to remonstrate]: to urge or adduce strong reasons against any measure or proceeding; to expostulate. Remon'strating, imp. Remon'strated, pp. Remon'strant, a. *-strănt* [F.—L.]: urging strong reasons against an act; expostulatory: N. one who remonstrates: in *eccles. hist.*, term applied to the Arminians who presented 1610 to the assembled states of the province of Holland a '*Remonstrance*,' containing the chief articles of their belief (see Arminius, Jacobus). Remon'strator, n. *-strā-tẽr*, one who remonstrates. Remon'strance, n. *-străns*, strong representation against a measure or proceeding; reasons urged in opposition; expostulation; in *OE.*, show; discovery.

REMORA, n. *rĕm'ō-ră* [L. *remŏra*, delay, hindrance; *remŏrārī*, to delay—from *re*, back; *mora*, delay]: in *med.*, a stagnation, as of the blood; in *OE.*, hindrance or obstacle.

REM'ORA, or Sucking-fish (*Echeneis*): genus of fishes which Cuvier placed among the *Discoboli* (q.v.), but which Müller assigns to the order *Anacanths*, and regards as constituting an entire family, *Echeneidæ*. Their chief relation to the *Discoboli*, indeed, is in the possession of a sucker, by which to affix themselves to objects of various kinds; but the sucker itself is very different. The remoras have an elongated body, covered with very small scales; one soft-rayed dorsal fin above the anal fin; head flattened, covered with an elongated disk extending back beyond it, which is the sucker; mouth large, with numerous small recurved teeth on both jaws, the vomer, and the tongue. The sucker-disk exhibits numerous transverse cartilaginous laminæ directed backward, and has a free flexible broad margin. These laminæ are formed by modification of the spinous processes of a first dorsal fin. They are moved simultaneously by sets of muscles raising or depressing them, and when they are raised after the margin of the

disk has been closely applied to a smooth surface, a vacuum is created; and so powerful is this apparatus, that great weights may be dragged by a R.; while it obstinately refuses to let go its hold, and will even submit to be torn in pieces before it does so. The White-tailed R. (*E. albicanda*), often called shark-sucker, is found around Long Island; it is 1–2 ft. in length, gray, with a dark lateral band. The Indian R. (*E. naucrates*) is larger, with 17–18 disk-plates, and occurs from the e. United States around the world to Japan. The Common R. (*E. remora*), of the Mediterranean,

Remora (*Echeneis remora*).

and of the ancients, is a small fish, seldom more than eight inches long, of dusky-brown color. It is found in the Atlantic, and occasionally as far n. as the British coast. It is frequently seen among fishes following ships, and often attaches itself by its sucker to some other fish, even of a kind that would make haste to devour it if it could be reached; often also to the rudder or bottom of a ship. The ancients imagined that it had power to impede or arrest the course of a ship, a fable credited till recent times. Thus, it was alleged, was Antony's ship detained from getting soon enough into action in the memorable and decisive battle of Actium. Of what use this power of adhesion is to the R. is not known. The R. is very palatable food. There are about ten known species, some of the tropical ones much larger than the Common Remora. One of them is said, on the authority of Commerson, to be used on the coasts of Mozambique for catching turtles: a ring is fixed round its tail, with a long cord, and the fish, placed in a vessel of sea-water, is carried out in a boat; the fishermen row gently toward a sleeping turtle, and throw toward it the R., which seldom fails immediately to affix itself, when the cord and turtle are drawn in.

REMORSE, n. *rĕ-mŏrs'* [L. *remor'sus*, tormented, disturbed—from *re*, back or again; *mordĕō*, I bite: It. *rimorso:* F. *remords*]: the pain or anguish of conscience excited by the recollection of guilt; in *OE.*, pity; tenderness; sympathetic sorrow. REMORSE'FUL, a. *-fûl*, full of remorse; in *OE.*, tender; compassionate. REMORSE'FULLY, ad. *-lĭ.* REMORSE'LESS, a. *-lĕs*, unpitying; insensible to distress; cruel. REMORSE'LESSLY, ad. *-lĭ.* REMORSE'LESSNESS, n. *-nĕs*, the state or quality of being remorseless; insensibility to distress.—SYN. of 'remorse': regret; anguish; compassion; compunction; repentance; penitence; contrition;—of 'remorseless': unpitying; cruel; pitiless; relentless; savage; unmerciful; merciless; implacable; unrelenting.

REMOTE, a. *rĕ-mōt'* [L. *remōtus*, afar off, distant—from *re*, back; *mōtus*, moved; *movēre*, to move: It. *remoto:* OF. *remot*]: distant in any sense; not near; afar off; alien; foreign; not agreeing with; inconsiderable, as resemblance. REMOTE'LY, ad. *-lĭ*, not nearly; at a distance. REMOTE'NESS, n. *-nĕs*, distance in any sense; not nearness; slightness: in *law*, undue prolongation of the period in which a provision in a will or deed in favor of some person, vests: the term denotes a violation of the 'rule against perpetuities,' which rule has for its object to prevent estates from being inalienable. This rule requires that an estate shall vest within a life or lives in being, with the addition of 21 years and the period of gestation afterward. REMOTION, n. *rĕ-mō'shŭn*, in *OE.*, state of being removed to a distance.

RÉMOULADE, n. *rā'mô-lâd'* [F. *rémoulade, rémolade*, a sharp sauce]: in cookery, a superior salad-dressing, consisting of the yolks of two eggs, boiled hard; flour of mustard, about a teaspoonful, rubbed up with three or four tablespoonfuls of oil; to which when thoroughly incorporated, are added two tablespoonfuls of vinegar and a little pepper, and other flavoring materials according to taste. It is much used in making the salad Mayonnaise. The term is sometimes applied loosely to a pickle or sauce.

REMOUNT, v. *rē-mownt'* [*re*, again, and *mount*]: to mount again; to reascend: N. a fresh horse with his equipments.

REMOVE, v. *rĕ-môv'* [L. *removērĕ*, to remove—from *re*, back; *movĕō*, I move: It. *rimovere:* OF. *remouvoir*]: to take or put away; to put from its place; to change place in any manner; to change residence: N. act of moving; state of being removed; change of place; departure; a step in any scale of gradation; an indefinite distance; a dish to be changed while the rest of the course remains; in *OE.*, translation of one to the place of another. REMOV'ING, imp. REMOVED', pp. *-môvd':* ADJ. remote; distinctly separate from others. REMOV'ABLE, a. *-ă-bl*, that may be removed from an office or station. REMOV'ABIL'ITY, n. *bĭl'ĭ-tĭ*, the capacity of being removed or displaced. REMOV'AL, n. *-ăl*, act of moving; state of being removed; dismission from a post; change of residence; act of putting an end to. REMOV'EDNESS, n. *-ĕd-nĕs*, the state of being removed; remoteness.

REMOV'AL OF GOODS, by a tenant: act to prevent the landlord distraining or seizing the goods in payment of rent. If a tenant fraudulently and secretly removes goods from leased premises, and the rent is already due, the landlord might take and seize these within a certain time fixed by statute, wherever they might be found; but if the goods were removed before the rent became due, the landlord could not follow them. This is an incident of the procedure of distress of goods for the nonpayment of rent. The whole doctrine of distress for rent is unpopular in the United States, and it has been abolished in many states; in those where the remedy still exists, it is governed by statutory provisions.

REMSCHEID, *rĕm'shīt:* manufacturing town of Prussia, govt. of Düsseldorf, 1,110 ft. above sea-level, 18 miles e.s.e. of the city of Düsseldorf. Originally a villa, it contained a church as early as 1189. It has extensive manufactures of iron wares, cutlery, etc. Pop. (1900) 58,103.

REM'SEN, Ira, M.D., PH.D., LL.D.: American chemist and educator: b. New York, Feb. 10, 1846. He studied at the College of the City of New York, was graduated in 1867 from the medical department of Columbia, pursued chemical courses at Munich and Göttingen, and in 1870-2 was assistant to Professor Rudolph Fittig in the chemical laboratory of the University of Tübingen. In 1872-6 he was professor of chemistry and physics in Williams College, and in 1876, upon the organization of the Johns Hopkins University, was made professor of chemistry in the new institution. He formed its chemical department and has continued to direct the numerous researches of the Johns Hopkins laboratory, the facilities of which are not excelled in the United States. Despite the large amount of executive work devolving upon him in connection with his chair, he found opportunity for considerable original investigation, including that in connection with the oxidation of aromatic substitution products, the sulphides, double halides, and the decomposition of diazo compounds by alcohol. He was made vice-president of the university, and frequently, in the absence of the president, Dr. Daniel Coit Gilman, acted as president. In June 1901 he was chosen president upon the resignation of Dr. Gilman. In 1873 he was elected to the American Association, in 1875 made fellow, and in 1879 president of the chemical section, and in 1902 president of the association. He became a member of the National Academy of Sciences in 1882, and was at one time president of the American Chemical Society. He founded in 1879, and has since edited, the *American Chemical Journal.* Among his text-books are: *The Principles of Theoretical Chemistry* (1877); *Introduction to the Study of the Compounds of Carbon, or Organic Chemistry* (1885); *Introduction to the Study of Chemistry* (1886); *The Elements of Chemistry* (1887); *A Laboratory Manual* (1889); and *Chemical Experiments* (1895).

REMUNERATE, v. *rĕ-mū'nĕr-āt* [L. *remūnĕrātus*, rewarded or recompensed—from L. *re*, back; *mūnus*, a gift: It. *remunerare:* F. *rémunérer*]: to reward or recompense for any service, loss, or expense; to repay or requite. REMU'NERATING, imp. REMU'NERATED, pp. REMU'NERABLE, a. *-ă-bl*, capable of being remunerated; fit or proper to be recompensed. REMU'NERABIL'ITY, n. *-bĭl'ĭ-tĭ*, the capability of being rewarded. REMU'NERA'TION, n. *-ā'shŭn* [F.—L.]: a payment or equivalent for services, loss, or sacrifices; reward; recompense. REMU'NERATIVE, n. *-ă-tĭv*, yielding reward or recompense; profitable. REMU'NERATORY, n. *-ā-tĕr-ĭ*, affording recompense; rewarding.—SYN. of 'remunerate': to compensate; reimburse; reward; requite; repay; recompense; satisfy; pay.

REMURMUR, v. *rē-mĕr'mĕr* [*re*, again, and *murmur*]: to return or echo in low hoarse sounds; to utter back in murmurs.

RÉMUSAT, *rā-mü-zâ'*, CHARLES, Comte DE: French philosopher and politician: 1797, Mar. 14—1875, June 6; b. Paris; son of Auguste Laurent, Comte de R., Provençal gentleman who held various public offices during the first Empire and after the Restoration. R. studied with brilliant success at the Lycée Napoléon, and made his political *début* 1818 as a Doctrinaire journalist, allying himself closely with Guizot, who, he confessed, had more than any other influenced his opinions, but he subsequently withdrew from this connection, and became more independently liberal, though always with temperate views. Some of his earlier political essays were important. On the establishment of the *Globe* 1824, R. became one of its most indefatigable contributors, and his name appears in the list of journalists who signed the protest against the fatal 'ordonnances' of the minister Polignac, which brought about the July revolution. After 1830 R. entered the French chambers as deputy, serving till 1848. He supported the ministry of Casimir Périer, was for a brief period under-sec. of state (1836) in that of Comte Molé; and 1840, under Thiers, he was made minister of the interior, but soon resigned. After the flight of Louis Philippe, he was a supporter of the party of order. He was exiled after the *coup d'état* of Louis Napoleon, but subsequently received permission to return. He engaged in literary and scientific studies, till Thiers called him, 1871, Aug., to the portfolio of foreign affairs, which he retained until 1873. He was long a well-known contributor to the *Revue des Deux Mondes*. R. had unusual intellectual powers; and was one of those men from whom great things were always expected, but who fall short of large achievement, perhaps by reason of an extremely critical bent of mind. Among his writings are *Essais de Philosophie* (Paris 2 vols. 1842); *Abélard* (2 vols. 1845); *Passé et Présent* (2 vols. 1847); *Angleterre au XVIIIe. Siècle* (1856); *Bacon* (1858); *Hartley* (1874); *Histoire de la Philosophie Anglaise de Bacon à Locke* (1875); and his philosophical drama, *Abélard* (1877).

RÉMUSAT', Claire Elisabeth Jeanne Gravier (de Vergennes), Comtesse de: 1780, Jan.—1821; b. Paris; mother of Count Charles François Marie de R., and grand-niece of Vergennes, prime minister under Louis XVI. She married when very young, was a maid of honor and an intimate friend of Empress Josephine, and a noted beauty of Napoleon's court. Her endowments of mind and heart were rare; and she left very interesting and valuable *Mémoirs* (not pub. till 1879, 80, two vols.), exposing Napoleon's base character by an analytical narrative of his home life, which supplies evidence of its own truthfulness.

RÉMUSAT, Jean Pierre Abel: distinguished Chinese scholar: 1788, Sep. 5—1832, June 4; b. Paris. He studied medicine, and took his diploma 1813; but as early as 1811, had published *Essai sur la Langue et la Littérature Chinoises*, the fruit of five years' arduous work. In 1813, the conscription seized him, but, instead of being compelled to serve as a common soldier, he was appointed asst. surgeon in the Paris milit. hospitals, and was subsequently in charge of fever-patients at the hospital Montaigu. In the midst of arduous professional duties he found time to prepare for the press *Uranographie Mongole*, and *Dissertation sur la Nature Monosyllabique attribuée communément à la Langue Chinoise*. At last, a chair of Chinese was instituted at the Collége de France, and R. was named prof. 1814. Among his numerous subsequent works are—*Recherches sur les Langues Tartares* (1820); *Éléments de la Grammaire Chinoise* (1822), the grandest monument of his vast Sinological erudition; *Recherches sur l'Origine et la Formation de l'Écriture Chinoise* (1827). Walckenaer said of him: 'He has endeavored to embrace everything relating to the nations which he proposed to make known. Religious beliefs, philosophical systems, natural history, geography, political revolutions, the origins of races, biography, literature, manners, habits, and customs—he has treated all in an equally masterly style.' Others of his works illustrative of this eulogy, are—*Étude Historique sur la Médecine des Chinois; Tableau Complet des Connaissances des Chinois en Histoire Naturelle* (unfinished); *Sur la Pierre Iu* (a curiously learned disquisition on a crowd of historical questions and religious rites); *Notice sur la Chine et ses Habitants* (in which the author treats of the extent, administration, manners, commerce, etc., of China); *Sur l'Extension de l'Empire Chinois en Occident depuis le Premier Siècle avant Jésus-Christ jusqu'à nos Jours*. R. was the first to make known in Europe the life and opinons of the philosopher Lao-tsze, head of the religious sect, *Taou-isé;* and he wrote on the history of Buddhism. In 1818 R. became one of the editors of the *Journal des Savants;* 1822 he founded the *Société Asiatique* of Paris. He died of cholera at Paris, at the early age of 44.

RENAISSANCE, *rĕ-nā'sans*, F. *rĕh-nā-sŏngs'*, in Architecture: style which succeeded the Gothic in Europe, and preceded the rigid copyism of the classic revival in the first half of the 19th c. See ITALIAN ARCHITECTURE for the rise and progress of the R. in the country of its birth. The spread of classical literature during the 15th and 16th c. (see RENAISSANCE, THE) created a taste for classic architecture in every country in Europe. France, from her proximity and constant intercourse with Italy, was the first to introduce the new style n. of the Alps. Francis I.

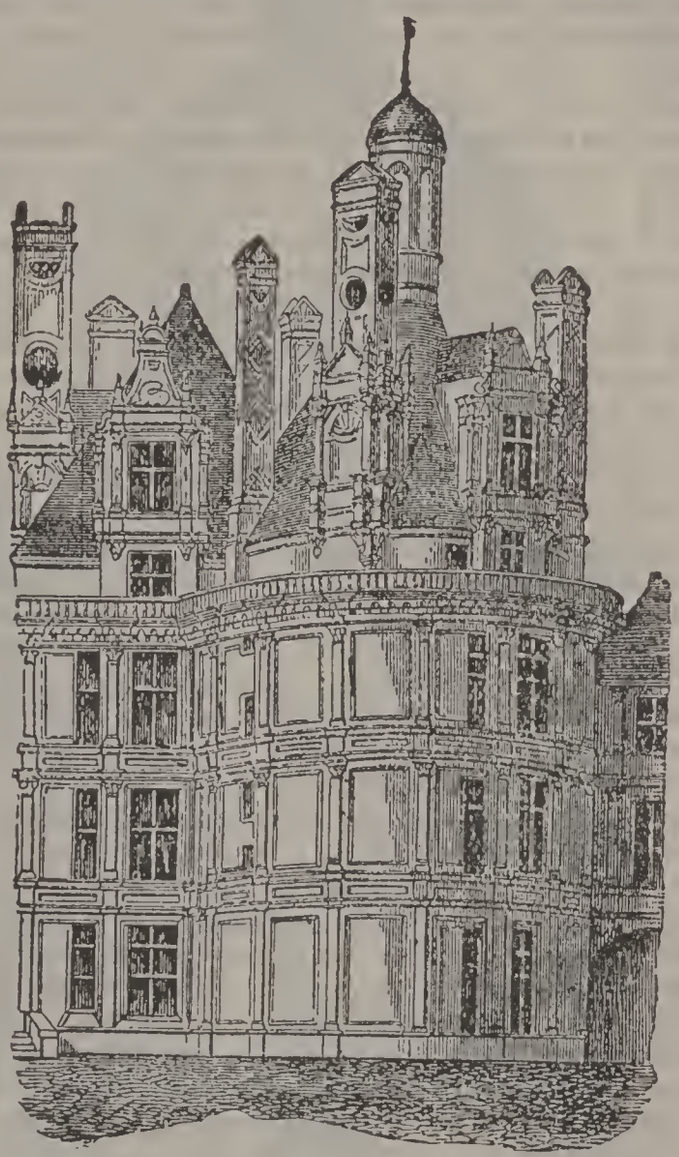


Fig. 1.—Chateau of Chambord.

invited Italian artists to his court in the the first half of the 16th c: the most distinguished were Leonardo da Vinci, Benvenuto Cellini, Primaticcio, and Serlio. These artists introduced Italian details, which native architects applied to the old forms to which they were accustomed and which suited the purposes of their buildings, thus originating a style similar to, though diverse from, that of Italy.

The Italian buildings were chiefly churches, St Peter's being the great model. In France (as in other countries n. of the Alps), the supply of churches was greater than was

required. The grand domestic buildings of Florence and Rome were actually needed for defense, and were founded in design on the old mediæval castles, which the nobles occupied within the cities. The domestic architecture of France is taken rather from the luxurious residences of the monks, and though very graceful in outline and in detail, its buildings lack the force and grandeur of the Italian palaces.

In the French R. so much are the old Gothic forms and outline preserved, that the buildings of Francis I. might, at a short distance, be mistaken for Gothic designs, though, on nearer approach, all the details are found to be imitated from the classic. Such are the palaces of Chambord and Chenonceaux on the Loire, Fontainebleau, and many others. The churches of this period are the same in their principles of design. Gothic forms and construction are everywhere preserved, while the detail is as near classic as the designers could make it. St. Eustache, in Paris, is one of the finest examples of this transitional style.

From the middle of the 16th to the middle of the 17th c., a style prevailed which may be said to have combined all the defects of the R. It was neither classic nor Gothic. It had no principles of construction or decoration except the individual caprice of the designer. This style, known usually as that of the time of Henry IV., is the basest which has been adopted in France, and has no redeeming qualities. It may be distinguished by the constant use of meaningless pilasters, broken entablatures, curved and contorted cornices, architraves, etc., all applied so as to conceal rather than to mark and dignify the real uses of the features of the buildings. The Tuileries, wrecked by the Commune, showed all these defects. From this debased and meaningless style, architecture gradually recovered, and during the 18th c., a style more becoming the dignity and importance of the *Grand Monarque* was introduced. The classic element began to prevail, to the entire exclusion of all trace of the old Gothic forms. Many very large palaces are in this style; but, though grand from their size, and striking from their richness and luxuriance, they are frequently tame and uninteresting as works of art. The palace of Versailles (q.v.) is the most prominent example. The two Mansards, one of whom designed Versailles, had great opportunities during this extravagant epoch. Their invention of giving a row of separate houses the appearance of one palace, which has ever since saved architects a world of trouble, was one of the worst blows which true street-architecture could have received. The e. front of the Louvre, designed by Perrault, is one of the best examples of the style of the age. Many elegant private hôtels and houses in Paris were erected at this period. The most striking peculiarity of the style of Louis XIV. is the ornament then used, called Rococo (q.v.).

The classic R. was completed in the beginning of the 19th c. by the literal copyism of ancient buildings. Hitherto, architects had attempted to apply classic architecture to the requirements of modern times; now they tried to make

modern wants conform to ancient architecture. In the Madeleine, for instance, a pure peripteral temple is taken as the object to be reproduced, and the architect has then to see how he can arrange a Christian church inside it. Many buildings erected during the time of the Empire are indeed very impressive, with noble porticoes and broad

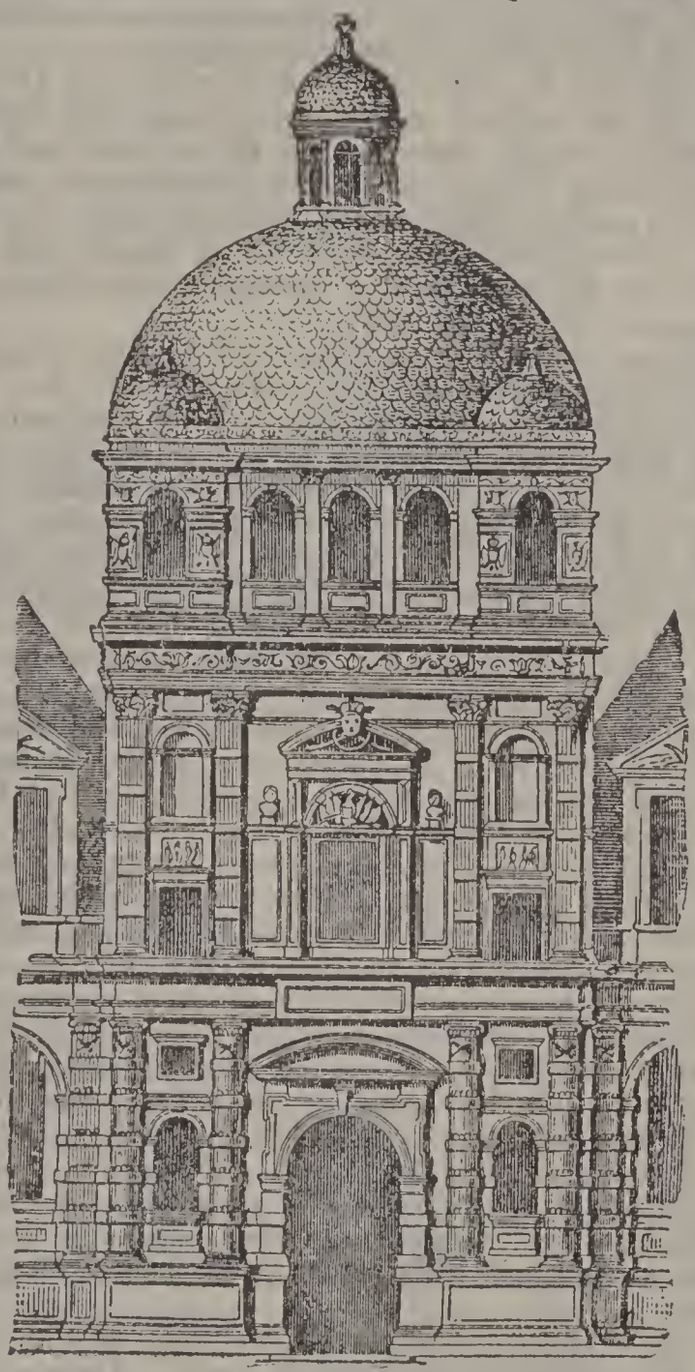


Fig. 2.—Central Pavilion of the Tuileries.
As designed by De Lorme (from Mariette).

blank walls; but they are in many respects mere shams; attempts to make the religious buildings of the Greeks and Romans serve for the conveniences and requirements of the 19th c. This has been found an impossibility—people have rebelled against houses where the window-light had to be sacrificed to the reproduction of an ancient portico

and in which the height of the stories, the arrangement of the doors, windows, in fact all the features, were cramped. and many destroyed. The result has been that this cold and servile copyism is now entirely abandoned, and the French are working out a free kind of R. of their own, which promises well; and is at the present moment, as the streets of Paris testify, the liveliest and most appropriate style in use for modern street-architecture.

In Spain, the R. style took early root, and from the richness of that country at the time, many fine buildings were erected; but it soon yielded to the cold and heavy 'Greco-Romano' style; and that was followed by extravagances of style and ornament more absurd than any of the reign of Louis XIV. The later R. of Spain was much influenced by the remnants of Saracenic art which everywhere abound in that country.

In England, as in other countries of Europe, classic art accompanied the classic literature of the period; but, being at a distance from the fountainhead, it was long before the native Gothic style gave place to the classic R. It was more than a century after the foundation of St. Peter's that Henry VIII. brought over two foreign artists—John of Padua and Havenius of Cleves—to introduce the new style. Of their works, we have many early examples at Cambridge and Oxford, in the latter half of the 16th century. Longleat, Holmby, Wallaton, and many other county mansions, built toward the end of the 16th c., are fine examples of the gradual introduction of the new style. The course of the R. in England was similar to its progress in France, though slower. Little classical feeling prevailed till about 1620. The general expression of all the buildings before that date is almost entirely Gothic, though an attempt is made to introduce classical details. The pointed gables, mullioned windows, oriels and dormers, and the picturesque outlines of the old style, all are retained long after the introduction of quasi-classic profiles to the moldings. This style, which prevailed during the latter half of the 16th c., is called Elizabethan, and corresponds to the somewhat earlier style in France of the time of Francis I. This was followed in the reign of James I. by a similar but more extravagant style called Jacobean, of which Heriot's Hospital is an example; the fantastic, ornaments, broken entablatures, etc., over the windows being characteristic of this style, as of that of Henry IV. in France.

The first architect who introduced real Italian feeling into the R. of England was Inigo Jones. After studying abroad, he was appointed supt. of royal buildings under James I., for whom he designed a magnificent palace at Whitehall. Of this, only one small portion was executed (1619–21), and still exists under the name of the Banqueting House, and is a good example of the Italian style. Jones erected also several elegant mansions in this style, which then became more generally adopted. In the latter half of the 17th c., a splendid opportunity occurred for adoption of the R. style after the great fire of London.

Sir Christopher Wren rebuilt an immense number of churches in that style, of which St. Paul's (q.v.) was the most important. The spire of Bow Church and the interior of St. Stephen's, Wallbrook, are much admired.

During the 18th c., classic feeling predominated, and gradually extended to all classes of buildings. In the early part of the century, Vanbrugh built the grand but ponderous palaces of Blenheim and Castle Howard, which have

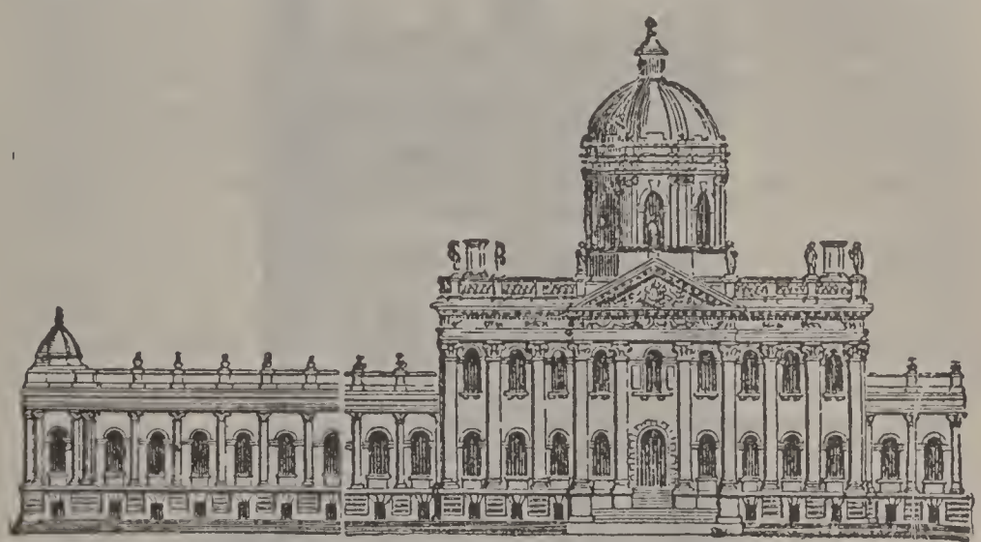


Fig. 3.—Park Front of Castle Howard.

a character and originality of their own. To these succeeded a vast number of noblemen's mansions, designed by Campbell, Kent, the Adamses, and others. Many of these, like the contemporaneous buildings of France, are of great size and magnificence; but they are usually tame and cold in design, and a sameness pervades them all. They generally consist of a rustic basement-story, with a portico over the centre, and an equal number of windows on either side. The portico is considered essential, and though perfectly useless, the light and convenience of the house are invariably sacrificed for it.

The further study of the buildings of Greece and Rome led, in the beginning of the 19th c., to the fashion of reproducing them more literally. All important public buildings were now required to be absolute copies of ancient buildings, or parts of them, or to look like such; and then the architect had to work out the accommodation as best he might. St. Pancras' Church in London is an example; it is made up of portions from nearly every temple in Greece. Many really successful buildings, such as St. George's Hall, Liverpool, the High School and Royal Institution in Edinburgh, have been erected in this style; but they owe their effect not to their being designs well adapted to their requirements, but to the fact, that they are copies from the finest buildings of antiquity. Sir Charles Barry was the first to break away from this thraldom, and to return to the true system of designing buildings—by arranging their general features so as not only to express the purposes that they are intended to serve, but in so doing to form the decorative as well as the useful fea-

tures of the buildings. The Travellers' Club-house and Bridgewater House in London are admirable specimens of his design. There are no superfluous porticoes or obstructive pediments, but a pleasing and reasonable design is produced by simply grouping the windows, and crowning the building with an appropriate cornice.

Fig. 4.—Part of Park Front of Bridgewater House.

As above noticed, a similar style of domestic architecture is now being worked out in France; but both there and in Britain there has been a reaction against everything classic; and a revival of mediæval architecture has superseded that of classic, especially in ecclesiastical buildings. A very large number of churches have been erected within the last 20 years in the Gothic style, but it cannot be said that these are usually well adapted to the modern Prot. service. The most magnificent example of this style is the Palace or Houses of Parliament at Westminster.

In Germany, Russia, and every country of Europe, the R. prevailed in a manner similar to that above described In Germany, there are few specimens of early R., the picturesque castle of Heidelberg being almost unique as an early example. The Zwinger and the Japanese palace at Dresden, which are nearly alone as edifices of the beginning of the 18th c., show how poor the architecture of Germany then was. In the domestic buildings of Nuremberg, Dresden, and other towns of n. Germany, there are many instances of the picturesque application of classic detail to the old Gothic outlines.

One of the most striking examples of the revival of classic art occurred in Bavaria during the first half of the 19th c., under the auspices of King Louis. He caused all the buildings that he had seen and admired in his travels to be reproduced in Bavaria. Thus, the royal palace is the

Pitti Palace of Florence on a small scale; St. Mark's at Venice is imitated in the Byzantine Chapel-royal; and the Walhalla, on the banks of the Danube, is an exact copy (externally) of the Parthenon. The finest buildings of Munich are the Picture-gallery and Sculpture-gallery by Klenze, both well adapted to their purpose, and good adaptations of Italian and Grecian architecture. In Vienna and Berlin, there are many examples of the revived Classic and Gothic styles, but the Germans have always understood the former better than the latter The museums at Berlin, and many of the theatres of Germany, are good examples of classic buildings.—The domestic architecture of Berlin is well worthy of notice, many of the dwelling-houses being quite equal in design to those of Paris.

Of the other countries of Europe, the only one which deserves remark for its R. buildings is Russia. St. Petersburg is, of all the cities of Europe, the one which best merits the title of a city of palaces. From the date at which the city was founded, these all are necessarily R. in character. Nearly all are the works of German or Italian architects, and unfortunately, for the most part in the coldest and worst style. The ornaments of the palaces are chiefly pilasters running through two stories, with broken entablatures, etc., and ornaments of flimsy rococo. The New Museum, by Klenze, is, however, a marked exception.

Together with architecture, during the period of the R., Painting (q.v.) and Sculpture (q.v.) and all the other arts took their models from the classic remains which were so carefully sought for and studied. All ornamental work, such as carving, jewellery, and metal-work of all kinds, followed in the same track. Mediæval niches and pinnacles gave place to the columns and entablatures of the classic styles, and the saints of the middle ages yielded to the gods and goddesses of ancient Rome.

RENAISSANCE, n. *rĕ-nā'sans*, F. *rĕh-nā-sŏngs'*, THE (sometimes RENASCENCE, *rĕ-năs'sĕns*) [F., new birth—from *re*, again; *naissance*, birth; *naître*, to be born—from L. *nasci*, to be born]: comprehensive name for the great intellectual movement in Europe in the early part of the 16th c., which marks the transition from the Middle Ages to the Modern World; a movement including a very marked change in attitude of mind and ideal of life, as well as in philosophy, art, literary criticism, political and religious thought. (For a phase aside from the scope of this article, see RENAISSANCE, in Architecture.) Substantially a revolt against the barrenness and dogmatism of Mediævalism, the new spirit claimed the entire liberation of reason; and passionately recognizing and studying the rich humanity which flourished in the classical times of Greece and Rome, aimed at a complete rehabilitation of the human spirit with all the free activities, and arts, and graces which invested that earlier age. It was an escape—at first hesitating, then triumphant—from a life regulated and confined on all sides by ecclesiastical tradition and intellectual

tyranny, into joyous freedom and unfettered spontaneity —the most pregnant revolution history has seen. Zeal for the *Litteræ Humaniores* brought forth a new ideal of culture, and the new view of life for which the term Humanism is used. R., re-birth, was used originally as synonymous with the Revival of Letters, the resurrection of an accurate knowledge of the classical languages and classical literatures of Greece and Rome in all their depth and breadth, interpreted in their own spirit, and divested of the narrow traditional limitations. Greek in especial was practically a new discovery, and a vastly important one, but the knowledge of the classics was only one side of the movement which permeated and transformed philosophy, science, art, and religion. The new spirit powerfully aided in the revolt from the papacy, in the establishment of Protestantism and the right of free inquiry. Under its impulse astronomy was reformed by Copernicus and Galileo, and science started on its modern unfettered career; by it, too, feudalism was abolished, and the demand for political liberty began to be raised. Reverence for the Holy Roman Empire and for its ancient rival the Papacy were alike decaying; a new sense of nationality was springing up, and national languages began to flourish. To the same general impulse, as causes or effects, belonged also the invention of printing and multiplication of books, new methods of paper-making, the invention of gunpowder, the use of the mariner's compass, the discovery of America, and the exploration of the Indian Sea. The fall of the Eastern Empire, 1453, sent swarms of Greek scholars to promote the revival of scholarship, already in progress in w. Europe. From the nature of the case, it is impossible to fix a definite date for the beginning of the R.; long before the close of the Dark Ages there were isolated scholars and thinkers who anticipated the new light. But the main stream of the movement originated in Italy toward the end of the 14th c., and, attaining its full culmination there in the earlier half of the 16th, the R. extended throughout all the rest of Europe; France, Germany, England, and other countries, participating later in the movement, which in each of them took a somewhat different shape. But Italy specially was the nursing-mother of the Renaissance. (For the main development of the R. in religion, see REFORMATION, THE: for its influence in art, see SCHOLASTICS: HUMANISTS. See also ITALIAN ARCHITECTURE: PAINTING: and the numerous articles on the great authors and thinkers of the period—Boccaccio, Bruno, Campanella, Cimabue, Erasmus, Gemistus, Giotto, Petrarch, Raphael, etc.)

For the first herald of the R. we may go as far back as Dante (1265–1321), who, with all his mediævalism of conception, yet by the pristine energy and fulness of his poetry, was a worthy follower of his chosen master, Virgil. The first positive impulse, however, in that direction was imparted by Petrarch (1304–74). Besides suggesting in his Italian *Rime* the old Roman grace, he awoke enthusiasm for the classics by his Latin epic and numerous

epistles and dissertations. In his old age he tried to imbibe a little Greek at the extremely sorry sources within his reach, and on receiving Homer from Constantinople, urged Boccaccio to translate the supreme poet into Latin. Boccaccio did not rest till he had piously, though very imperfectly, rendered into Latin both the *Iliad* and *Odyssey*. A secretary of Petrarch, Giovanni Malpaghino, commonly called da Ravenna, was the most accomplished Latinist of his day, and wandering, as he did, all over Italy, communicated the new fermentation to distinguished pupils, Barbaro, Strozzi, Poggio, Bruni, who, in their turn, propagated it anew from Venice, Rome, Mantua, and elsewhere. Luigi Marsigli's house became a private academy of the new doctrine, a resort of all the promising neophytes of Florence. Caluccio de Salutato, who translated Dante into Latin, having been made chancellor of Florence 1375, introduced into public documents the stately sonorous periods of the classic style, and so rendered it imperative on all princes and popes of the next age to have trained stylists as their secretaries. A like classic transformation was effected in epistolary correspondence by Gasparino da Barzizza, who made a special study of Cicero's letters. The glory of having been the first Florentine to visit Byzantium for the sake of learning the sacred Greek belongs to Giacomo da Scaparia. To Salutato and Palla degli Strozzi is due the foundation of a Greek chair at Florence; and 1396, Manuel Chrysoloras, a genuine Greek in the flesh, began his instructions from the Greek chair. Chrysoloras planted schools also at Rome, Padua, Milan, and Venice. In the earlier period of the R., Florence leads the van. The president of the republic, Cosmo de' Medici, himself a scholar, theologian, philosopher, musician, financier, a connoisseur in painting, sculpture, and architecture, figures as the magnificent Mæcenas of the new learning, founding the Platonic academy, and opening his hospitable house to all the wits at home, and all the distinguished visitors attracted thither. The son of his physician, Marsilio Ficino (q.v.), Cosmo educated for the express purpose of interpreting Plato. Strozzi, perhaps the richest after Cosmo of the merchant princes of Florence, sent to Greece for countless volumes of MSS., and constantly kept copyists employed. Niccolo de' Niccoli spent his whole fortune in buying MSS., or procuring copies. Poggio Bracciolini, one of the most eminent of the scholars of his time, rescued Quintilian from a 'foul prison' and transcribed him, and copied with his own hand MSS. of Lucretius and Columella, while he also unearthed Italicus, Manilius, and Vitruvius. Though for 50 years chancellor in the Roman Curia, he directed the most poignant satires against the church. Vespasino da Bisticci (1421–98) was perhaps the last of the mediæval scribes, and the first of modern booksellers; he was agent of Cosmo, Nicholas V., and Frederick of Urbino, supplier of MSS. to Hungary, Portugal, Germany, and England, and the largest employer of copyists in Europe, whom, too, he personally superintended. The second period in the history of the R. is distinguished by indis-

criminate avidity for everything classic. As its most characteristic scholar may be cited Francesco Filelpho (1398-1481). Having studied rhetoric and Latin at Padua, he learned Greek at Constantinople, and became prof. at Venice, Bologna, and Florence, and the admiration of all Italy for erudition. In the third period of the R., the leading figures are Lorenzo de' Medici and Poliziano at Florence; Boiardo at Ferrara; and Sannazaro at Naples. President of Florence from 1469, and a universally versatile man, Lorenzo de' Medici was, like his grandfather Cosmo, his son Giovanni (Leo X.), and his nephew Giulio (Clement VII.), a munificent patron of learning. By the consent of all, the consummate writer among the humanists is Poliziano, whose *Manto*, *Ambra*, and *Nutritia* display almost as spontaneous a command of the classic languages as do his *Orfeo*, *Stanze*, and *Rima* of his native Italian. Toward the end of the 15th c. mere erudition began to sink in credit, and the accomplished personages who adorn the fourth period are of somewhat more independent type—the historians, Guicciardini and Machiavelli; the handsome Bembo, the splendid Alberti, Castiglione, author of *Cortegiano*, and Ariosto, author of *Orlando Furioso*, the *Cinque Canti*, and the polished cynical *Satires*. Some of the faults of the R. clung to it in all its periods. At one time pedantry threatened to check originality and spontaneity; the worst ancient works were prized more than the best written in the new European tongue. Petrarch valued himself mainly for his Latin works, and thought lightly of his Italian poems. The tendency was established to regard the classics as the one standard of learning and the one instrument of education. A worse fault was it that the revolt against mediæval religious tradition was accompanied to a very large extent by absolute and anti-Christian immorality and license. Literary and artistic refinement placed no check on brutal lusts and savage passions; though in a few men of high character, Michael Angelo, Raphael, Pico della Mirandola, Ficino, and others, in whom Humanism did not extinguish the principles of Christianity and morals, a singularly noble and complete humanity was displayed. The culmination of the R. in Italy may be dated within the half-century, 1456–1500; and its close for the land of its birth may be fixed at the sack of Rome 1527 by the Constable de Bourbon (q.v.), followed by the transference of Humanism in its later developments to France, England, and the rest of Europe.

In Germany, the change was as marked as in Italy, but the Humanism of Germany and the Low Countries was very different in spirit from that of Italy. Not less tinged by a revived love for ancient learning, it was never divorced from morality nor hostile to Christianity; and its most important direct development was the Reformation. Biblical and Oriental studies were strenuously cultivated. Among noted leaders were Erasmus, Melanchthon, Reuchlin, and Von Hutten. In the Netherlands and Flanders, the new school of painting was a notable development. In

France, the movement had rich results in art and letters. De Comines, Villon, Marot, Ronsard, but above all Rabelais, are types of the French Renaissance in literature; while within the sphere of scholarship and religious reform, are the Scaligers, Dolet, Muretus, Cujacius, Salmasius, Casubon, Beza, Calvin.

In England, Wycliffe and Chaucer may be regarded as the forerunners of the Reformation and the Renaissance; but the main stream of both these movements reached England contemporaneously. In scholarship the great names were Grocyn, Linacre, Colet, Ascham, and More; but the fullest English result of the Renaissance was the glorious Elizabethan literature, with Spenser and Shakespeare, and in philosophy, Bacon, as its most noted representatives.

See Burckhardt's *Die Cultur der Renaissance;* Pater's *Studies of the Renaissance;* Michelet's *Renaissance;* Geiger's *Humanismus;* Pasquale Villari's *Il Rinascimento;* Symond's *Renaissance in Italy.*

RENAISSANCE PAINTING: in Central and northern Italy, in the 14th c., the *Giotteschi,* or scholars and imitators of Giotto, soon lost the inspiration and initiative of his art. His great principle of the direct study of nature was much neglected; portraiture, which he had undertaken with imperfect knowledge, became a distinct branch of the art only in the 15th c.; and the landscape sentiment was as yet undeveloped. Nevertheless, the seeds of the great awakening of the human intellect, which brought with it a knowledge of antique art and a new intimacy with both Nature and contemporary man —and a consequent development of all the arts—were germinating; it appeared almost in the first decade of the 15th c. in both Italy and the Netherlands. For this Renaissance, the art of painting presented the most favorable means of expression, of rendering the spiritual rather than the merely corporal, the intangible as well as the appearance of reality; and also as an outlet for the individuality which had been so long smothered under formulas and conventions. Rather curiously, this restoration of a long-lost art began, among the Flemish painters, with a suddenness, a completeness, which it was impossible to maintain—the first great work which figures in the history of this restoration, the great altar-piece in the church of St. Bavon in Ghent, painted by the brothers Huybrecht (Hubert) and Jan van Eyck, is an example of completeness of pictorial representation, spiritual and technical, which the survivor of these painters himself was not able to equal in his other works. The mastery seems complete even of the new process of oil painting, which they are generally credited with having first practically employed. Contemporary with this Flemish school of Bruges and Ghent was another of Brabant, with the center in Brussels, founded by Rogier van der Weyden, similar in tendencies. Holland developed an independent

school, at Haarlem, the chief of which was Dierick Bouts (d. 1475), whose works show the influence of Van der Weyden, but are marked by somewhat greater luminousness and richness of color and display a knowledge of aerial perspective in landscape. In the paintings of Hans Memlinc of Bruges many of the archaic qualities of his predecessors disappear and are replaced by a greater suavity and feeling for beauty. The influence of the Van Eycks extended down to the end of the 15th c., and Flanders was the seat of a great artistic production, painters and students passing backward and forward between her borders and those of Italy. In France, in the latter part of the century, there was a northern school, and a smaller one in Provence, at the court of René d'Anjou; but the important paintings of this period were nearly all destroyed in the religious wars and the Revolution, and our knowledge of the art is derived chiefly from the miniatures.

The patronage which had been extended to the new art in the Netherlands, by princes, corporations, the church and private individuals, in the 15th c., was continued in the early years of the 16th. Foremost among the important representatives of the Northern spirit was Quinten Massys, or Massijs, of Antwerp (d. in 1530). Jan Gossart, called Mabuse, from his native town of Maubeuge in Hainault, on the contrary, after his journey to Italy, adopted many of the characteristics of the Southern painters, which found favor in the eyes of his countrymen. The Dutch painters of this period were numerous; the first to become widely known abroad was Lucas Jakobsz, called Lucas van Leyden. The movement toward realism and naturalism was slower in the schools of Germany, the chief of which was that of Cologne; the earliest important work now extant is the large altarpiece, a triptych, known as the *Dombild,* painted by Stephen Lochener (d. 1451). The painters of this school substituted for the pictorial or distant backgrounds of the Flemings generally a flat, gold one, and they differed from them also in their retention of the disk-shaped nimbus behind the heads. The Swabian school, chiefly Alsatian, was distinguished by a remarkable artist, a bold innovator, Martin Schongauer, the greatest master in Germany of his time, but now best known by his drawings and engravings. The schools of Ulm, Nördlingen and Augsburg were more or less influenced by the Flemish art; two families of painters, the Burckmairs and the Holbeins, combined to raise the fame of Augsburg to the highest degree. In both, an illustrious father was succeeded by a still more illustrious son—Thoman Burckmair by Hans, and Hans Holbein, the elder, by his famous son of the same name. The latter, and his brother Ambrosius, are found in Basel in 1515-16. As the most brilliant representative of the German Renaissance, Hans Holbein, the younger (q.v.), rose superior to

the limitations of the art of his time, and excelled in all branches. His large mural paintings have all been destroyed; but the votive picture executed for the family of the Burgomaster Meyer in 1526, his portraits—including those of the period of his sojourn in England at the court of Henry VIII.—and his designs and engravings, have been preserved. From the Franconian school, of which Nuremberg was the center, came the most formidable of his rivals, Albrecht Dürer, a pupil of Michael Wolgemut, painter of altar-pieces and of careful portraits, and a skillful wood-engraver. The influence of Nuremberg was diffused over a wide area—Schleswig, eastern Germany, Bohemia and Poland.

In the north of Europe, the spirit of the Renaissance lagged somewhat behind as compared with its development under the sky of Italy. Climatic conditions, the influence of the Gothic in making angular the forms and the draperies and in diminishing the wall spaces for mural painting, a neglect of the close study of the human body, of proportion, of perspective, a general empiricism in the sciences, the scarcity of examples of antique art, a lack of intelligent and munificent patronage in Germany, even the Reformation itself—all have been given as partial explanations of this inferiority. Notwithstanding his genius, his earnest researches, and his journey to Italy, Dürer's art remained hampered throughout his life by his mediæval limitations. The Italians, who fully appreciated his work, his imagination and intellectual power, declared that he would have been as great as the greatest of their own artists if they had been born in Florence or Rome and had studied the antique. His great influence over his contemporaries was extended by his engravings. Dürer's chief rival among his contemporaries was Albrecht Altdorfer, the Ratisbon master. Lucas Cranach, the elder, so called from his natal town in Franconia, established a school in Saxony, which survived for some years after his death, although unable to reproduce his strong individuality. In Upper Alsace, the renown of Martin Schongauer was continued by two painters, not natives of the province, Matthias Grünewald and Hans Baldung, the latter, also, betraying strongly the influence of Dürer. The school of Swabia, the most eminent and the most learned of the German Renaissance, boasted, in addition to the Burckmairs and the Holbeins, of Martin Schaffner, the so-called Master of Ulm, and some other painters. In the Spanish peninsula, at the period of the gradual expulsion of the Moors, the demand for church pictures brought painters from both Italy and Flanders—from the latter, among others, Jan van Eyck and Rogier van der Weyden.

Among the causes that contributed to the development of the full flower of the Renaissance in Italy—in addition to those already mentioned—may be cited the humanistic spirit, derived largely from the enthusiasm aris-

ing from the study of the antique, a general aspiration toward the noble and the beautiful, a new ideal of humanity. Contemporary with this was a revival of learning—more complete than in Germany. The art of painting, however, it was necessary to re-invent; the study of the human figure, the all important subject in the art of the Renaissance, was undertaken scientifically. Church painting remained for a long time the principal feature, and it was greatly favored by the abandonment of the old Gothic type and the division of the field into panels —which permitted of larger wall spaces, of pictures even longer than they were high. These were executed in fresco, the method perfected in the school of Giotto—*buon fresco,* painting on the last or smooth coating of plaster freshly applied to the wall and while still wet. That which could not be painted upon in the course of the day was cut out and replaced with fresh lime the next morning. In this manner the color becomes an integral part of the wall. The pigments were water colors, usually earths and minerals. Subsequent retouching was necessarily done *al secco,* on the dry wall, and this was generally considered regrettable and somewhat dangerous to the conservation of the painting. Sometimes in the contracts for decorative works we find this retouching insisted upon. Encaustic painting seems to have also been known; tempera and oil painting were usually observed for altar-screens and easel pictures, these being generally panels covered with a thin layer of plaster. For their studies and drawings, the artist worked in monochrome or *gris aille,* called by the Italians painting in *chiaro oscuro;* their colors were ground by their apprentices under their own eyes and selected with great care. The art of painting, the most eloquent expression of the Renaissance, was destined to outstrip the other manifestations, science and letters, if not architecture. Florence remained the chief seat of this art in the 15th c. as in the time of Giotto, though her authority was much less than in sculpture; the leaders were Masolino and his pupil Masaccio, to the latter is attributed the honor of having invented a new style in painting. Very different from his intelligent naturalism and fine sense of distinction was the sincere and naive piety of the work of the Dominican friar Fra Giovanni da Fiesole, called Fra Angelico; and still more so the tasteless 'realism' of Paolo di Dono, known as Paolo Uccello. Foremost amongst the direct heirs of Masaccio were Fra Filippo Lippi, and his son, called Filippino Lippi; the paintings of the former betraying new qualities of color and of *morbidezza.* With him originated a new type of the Madonna, afterward given its highest expression by Leonardo and Raphael—a presentation in which only the human idyl of motherly love and infantile innocence is sought. In the religious as in the allegorical and mythological subjects of Sandro Botticelli, something of the

mediæval awkwardness of expression reappears, redeemed by the grace and charm of the conception and the color. With him are associated as exponents of a modern, ingenious spirit, Benozzo Gozzoli, a pupil of Fra Angelico, and Pinturicchio (q.v.). Andrea Verrocchio is most popularly known as a sculptor, principally by his equestrian statue of Colleone, the Venetian general; Domenico Ghirlandaio, less original than Masaccio but more finished in his expression of realism, was, next to him, the most important painter of the Florentine school of the 15th c., and had for a pupil Michelangelo.

Of the Umbrian school, the chief seat was Perugia, though in this province painting was not centralized in the cities; the mystical and serene spirit of Perugino differed from the vivacious and investigating character of his predecessors in the school. The first artist to feel the influence of Florence was Piero degli Franceschi, but a more skilful was Luca Signorelli, his pupil, whose great painting of the 'End of the World,' in the chapel of the cathedral of Orvieto (which had been commenced by Fra Angelico), furnished themes and figures to Michelangelo for his 'Last Judgment.' In the best works of the master of Raphael, Pietro Vanucci, called Perugino, may be seen the same art, the same suavity and dignity, which characterize much of the early work of his famous pupil; he seems to have been the first in central Italy to master completely the new process of painting in oil.

In northern Italy, the most important center of the arts was at Padua, the school there having been founded in the second half of the 15th c. by Francesco Squarcione, known as the 'Father of Painters,' and the discoverer of the genius of Andrea Mantegna, whom he adopted at the age of 10. In this latter artist, one of the most learned, ingenious and original of his age, the first to master the complete rules of composition, the study of nature was happily balanced by a corresponding study of the antique. In Venice, enjoying a most unusual order and prosperity under the intelligent despotism of her dukes, the revival of art did not manifest itself strongly until the second half of this century, but its final florescence was one of the most brilliant of any age. Two families of painters appear in this first period, the Vivarini and the Bellini, the latter much the more famous. To them Antonello da Messina seems to have communicated the method of painting in oil, which they so soon mastered—a love of color and splendor being one of the natural gifts of the Venetians. The head of the family was Jacopo Bellini, who went to Florence early in his career; his sons were Gentile and Giovanni, the latter praised by Albrecht Dürer at the period of his visit to Italy in 1506. In the works of these Venetians appears that 'atmosphere' which is so diligently sought by the modern schools—the feeling of space and air, of the relative position and value of the figures in the general arrangement; the Gothic

angularity and awkwardness have been replaced by a fuller knowledge. The most eminent of the followers of Gentile Bellini was Vittore Carpaccio (Scarpaccia), famous for his cycle of nine pictures illustrating the legend of Saint Ursula.

The greatest name in the Renaissance proper is that of Leonardo da Vinci, b. 1452, distinguished as a scientist, an architect, a sculptor, a musician, an author, and a painter—and qualifying painting, himself, as the noblest of the arts and as at the same time a science. But few of his pictures survive, the most famous and the most wonderful being the portrait known as the 'Mona Lisa' in the Louvre. Of his numerous followers, the most productive and the most successful in expressing some of his qualities was Bernardino Luini. Michelangelo, on the other hand, vehemently protested against placing painting on a level with sculpture, and, indeed, remained to the end of his days '*Michelangiolo Scultore*' rather than the painter, even in his greatest mural decorations. His first patron was Lorenzo de Medici; and it was in 1508 that the pope Julius II. commissioned him to paint the ceiling of the Sistine Chapel in the Vatican. In 1535 he commenced the 'Last Judgment' on the end wall, and it was unveiled for the Christmas festival of 1541. The qualities of his rugged genius were peculiarly those best adapted to create a school of mannerisms and conventions among his imitators, and we see his influence very strongly developed even in his lifetime, and even in the favorite pupil of Raphael, Giulio Pippi, called Giulio Romano. To this pretentious and ignorant school of exaggerated muscular action and violent foreshortening, which flourished during the decadence of the art, was given the name of the Baroque. The art of Raphael Santi da Urbino, so different in quality, was eminently qualified by its combination of academical distinction with suavity and grace to secure the largest need of popular favor in his own time and in succeeding ages, and his 'Madonna Sistina,' now in the Dresden Gallery, was accepted for more than three centuries as the greatest painting in the world. Andrea del Sarto, the best colorist in the Florentine school, may be said to err only in a certain lack of deep feeling; and the versatile talent of Correggio leads up to the splendors of the later Venetian school of Giorgione, Palma, Vecchio and Titian, and, later still, of Paul Veronese, Tintoretto and Tiepolo, the apotheosis of the beauty of oil painting. Giorgio da Castelfranco, so great a Giorgio that he was called Giorgione, that is, Big George, was a fellow student with Titian under Giovanni Bellini. But very few of his authenticated works survive, one of them being in the Louvre. Of Giacomo Palma, the elder, called Palma Vecchio, more is known, over a hundred existing paintings being attributed to him, the finest being probably the altar-piece in S. Maria Formosa, Venice, a single figure of Saint Barbara. With the majestic figure of Titian, Tiziano Vecelli da Cadore

(1477-1576), the golden period of the Renaissance may be said to end—of all the numerous assistants who worked under him during his long life, including a brother and a son, none inherited his power. His paintings, sacred, allegorical, mythological, and portraits, are preserved in all the great galleries of Europe; the most beautiful, and perhaps the most characteristic of this school being the so-called *Earthly and Heavenly Love* in the Borghese Palace in Rome. For painting after 1550, see POST-RENAISSANCE PAINTING.

Bibliography.—Crowe and Cavalcaselle, *History of Painting in Italy* (1864; new edition begun in 1903); *A History of Painting in North Italy* (1871); *Titian, his Life and Times* (1877); *Raphael, his Life and Works* (1882); Burckhardt, *The Civilization at the Period of the Renaissance in Italy* (authorized translation by S. G. C. Middlemore); Vasari, *Vite dei Pittori, Sculturi, Architetti*, translated into English by Mrs. Jonathan Foster: Bohn's Library; *Lives of Seventy Painters, Sculptors and Architects. Edited and annotated in the light of recent discoveries by E. H. and E. W. Blashfield and A. A. Hopkins.*

RENAL, a. *rē'năl* [F. *rénal*, renal—from L. *rēnālis*—from *rēnēs*, the kidneys, the reins: It. *renale* (see REINS)]: pertaining to the reins or kidneys. RE'NIFORM, a. *-nĭ-fawrm* [L. *forma*, form]: of the form of kidneys.

RENAN, *rĕh-nŏng'*, JOSEPH ERNEST: philosopher and orientalist: 1823-1892, Oct. 2; b. Tréguier (Côtes-du-Nord) His first education he received at the hands of the priests who directed the school of his native place. At 16 years of age he was sent to Paris, where he entered the seminary of Abbé Dupanloup, to prepare himself for the priesthood. Three years later, he went to Issy, and having completed his philosophical studies there, to St. Sulpice On leaving this, however, he declared himself unable to follow the path traced for him. The theological and linguistical studies, to which he had devoted himself with rare industry, had led him to results which did not seem to allow him the exercise of priestly functions in his church. He took the place of *répétiteur* in a school, and here prepared himself for an academical career. In 1847 his Memoir, *Sur les Langues Sémitiques* ('On the Semitic Languages') obtained the Volney prize; and 1848 another Memoir, *Sur l'Etude du Grec dans l'Occident au Moyen Age* ('On the Study of Greek in the West during the Middle Ages'), was crowned. In 1848 he began to publish a periodical, *La Liberté de Penser* ('Liberty of Thought'), in which he embodied some of his most brilliant essays on theology, philosophy, philology, history, and the many variegated branches of his studies —all merely preparatory to the great work for which he concentrated all his energies—the investigation of the origin of Christianity, which, according to him, is as human and natural, and has grown out of the history and

circumstances of the times in precisely the same manner, as any other event in the records of humanity. His Memoir, *Sur les Langues Sémitiques*, he expanded 1855 into *Histoire Générale des Langues Sémitiques* ('General History of the Semitic Languages'), which, with all its defects, is the most methodical and brilliant compilation on the subject. Of the variety of subjects to which he applied himself, his numerous contributions to the *Revue des Deux Mondes* and the *Journal des Débats*, bear witness. In 1850 he published a historical essay, *Sur Averroes et l'Averroïsme*, for which he had collected materials on a scientific journey to Italy. In consequence of this he was appointed *Employé* at the Imperial Library in Paris. He further produced translations of Canticles and the Book of Job, with introductions and commentaries (*Le Cantique des Cantiques*, etc., 1860, *et Le Livre de Job*, etc., 1859). In 1860 he was sent by the emperor on a tour of exploration to Syria and Phœnicia, whose results were given to the world in *Mission de Phenice* (1864) and other works. On his return, he was elected to the chair of Hebrew at the Collége de France; but his inaugural lecture made him, through its too free handling of theological matters, so obnoxious to those in power, that his course was first suspended, and finally his professorship was taken from him. His work, *La Vie de Jésus*, forming Part I. of his *Origines du Christianisme*, occasioned a great stir in Europe and the United States. Its eloquent and lofty tributes to certain aspects of Christ's character are based on a purely naturalistic philosophy concerning his place and work in history. An abstract of it, in much more popular form, was published by him under the title *Jésus. Histoire des Apôtres* (1866), *Saint-Paul* (1869), *Antichrist* (1873), *Les Évangiles* (1877), *L'Église Chrétienne* (1879), and a vol. on the reign of Marcus Aurelius, complete the series. Other works are: *Études d'Histoire Religieuse* (1856), *Essais de Morale et de Critique* (1859), *La Réforme Intellectuelle et Morale* (1872), *Dialogues et Fragments Philosophiques* (1876), *Mélanges d'Histoire et de Voyages* (1878), the Hibbert Lectures (1880), delivered in London, his curious poem *Caliban* (1878), and his autobiographical *Souvenirs* (1883); *Feuilles détachées* (1892). R. was elected a member of the Academy 1878. He was master of a fine literary style, and his writings have unusual charm for the cultivated mind. When his *Life of Jesus* first appeared, so charming was its literary form and so wide its range of learning, that many Christians greatly feared its results; but it has long since ceased to be regarded as a dangerous attack. With all his knowledge he lacked the religious temperament and the scientific instinct.

RENARD, n. *rĕn'ĕrd* [F. *renard;* OF. *regnard*—from OHG. *reginhart*, hard or good of counsel—from *regin, ragin*, counsel; *hart*, strong]: a fox, usually so named in fables; written also REYNARD.

RENASCENT, a. *rē-năs'sĕnt* [L. *renas'cens* or *renascen'tem*, being born again—from *re*, again; *nascor*, I am born: It. *rinascente;* F. *renaissant*, new-born, born again]: springing or rising into being again. RENAS'CENCE, n. *-sĕns*, or RENAS'CENCY, n. *-sĕn-sĭ*, state of being produced again: see also RENAISSANCE. RENAS'CIBLE, a. *-sĭ-bl*, that may spring again into being.

RENAVIGATE, v. *rē-năv'ĭ-gāt* [*re*, again, and *navigate*]: to navigate again.

RENCOUNTER, n. *rĕn-kown'tĕr* [F. *rencontre*, an accidental meeting—from L. *re*, again: OF. *encontrer*, to meet—from F. *en*, L. *in*, into; *contra*, against]: a casual meeting in opposition or contest; a dash or clash; a shock; a sudden contest—a very usual spelling is in the French form, RENCONTRE, *râng-kŏng'tr:* V. to meet unexpectedly, whether friend or foe; to fight hand to hand. RENCOUN'TERING, imp. RENCOUN'TERED, pp. *-tĕrd.*—SYN. of 'rencounter, n.': fight; conflict; collision; clash; combat.

REND, v. *rĕnd* [AS. *rendan*, to tear: O. Fris. *renda*, to tear, break]: to separate or part with violence; to lacerate; to force asunder; to sever; to split. REND'ING, imp. RENT, pt. pp. *rĕnt:* N. a tear; an opening caused by a forcible division. REN'DER, n. *-dĕr*, one who rends.—SYN. of 'rend': to tear; burst; crack; split; break; breach; rupture; fracture; lacerate.

RENDER, v. *rĕn'dĕr* [F. *rendre*—from mid. L. *rendĕrĕ* for L. *reddĕrĕ*, to give up, to yield—from *re*, back or again; *dărĕ*, to give: It. *rendere*, to restore, to render]: to return; to restore; to surrender; to give up; to inflict, as retribution; to give in or deliver, as an account; to assign, as a reason; to cause to be; to invest with qualities; to translate; to give or afford, as assistance; in *OE.*, to represent; to exhibit; to show; to give: N. in *OE.*, a surrender. REN'DERING, imp.: N. a version or translation; a first coat of plaster on a wall. REN'DERED, pp. *-dĕrd.* REN'DERER, n. *-ĕr*, one who renders. REN'DERABLE, a. *-ă-bl*, that may be rendered.—SYN. of 'render, v.': to return; pay back; restore; give back; surrender; yield; give up; afford.

RENDEZVOUS, n. *rĕn'dĕ-vô* or *râng'dĕ-vô* [F. *rendez-vous*, a rendezvous—*lit.*, give yourselves up or show yourselves—from *rendre*, to give up (see RENDER)]: a place of meeting; an appointed place of meeting or assembling, as for troops or ships: V. to bring together at a particular place. REN'DEZVOUS'ING, imp. *-vô'ĭng.* REN'DEZVOUSED', pp. *-vôd'.*

RENDITION, n. *rĕn-dĭsh'ŭn* [Sp. *rendicion*, rendition, yielding—from L. *redditĭōnem*, a giving back or up; *readĕrĕ*, to give up (see RENDER)]: the act of yielding possession; surrender.

RENDSBURG, *rĕnz'bûrch:* town in the Prussian province of Schleswig-Holstein, at the junction of the Eider and the Kiel canal, 67 m. n.n.w. of Altona. It has an active trade. Pop. (1880) 12,776; (1890) 13,195.

RENÉ, *rĕh-nā'*, or RENATUS, *rē-nā'tŭs*, I. ('the Good'), titular King of Naples and Sicily: 1408–80; b. Angers; son of Louis II., Duke of Anjou and Count of Provence. R.'s paternal grandfather, Louis I., Duke of Anjou, second son of John the Good, King of France, had been adopted 1380 by Joanna I., Queen of Naples, as her successor; and on his death, his son, R.'s father, was crowned King of Naples and Sicily. But this recognition of his presumed rights was merely nominal, and when, on his death and that of his eldest son, Louis II., R., as the next heir, endeavored to make good his pretensions to the great Neapolitan heritage, he found himself involved in disastrous disputes with numerous other aspirants. R. had married Isabella of Lorraine, and through her was also a claimant of the rich territories of Lorraine, which brought on him the enmity of his wife's brother-in-law, the Duke of Burgundy, who laid equal claim to the heritage of the ducal House of Lorraine. When, 1442, R.'s powerful rival, Alfonso of Aragon, took Naples after a protracted siege, R. perceived that the struggle was virtually decided; and retired to his hereditary dominions in Provence, and thenceforth occupied himself with the administration of his territories, and with the cultivation of poetry and painting. In 1445 R. gave his beautiful daughter Margaret in marriage to Henry VI. of England, and at the same time obtained from his royal son-in-law the restitution of Anjou and Maine, which had remained in the hands of the English since the successful wars of Henry V. This did not, however, prevent R. from taking part in the wars of Charles VII. against the English 1449; but R., wearied with war, retired to Aix in Provence, where he attraced to his court the cultivators of song and romance, encouraged manufactures, and introduced improved methods of agriculture. Among his subjects, the memory of 'the good King René' was long held in great veneration. R.'s sons had died before him; and as with him the House of Anjou became extinct, its territorial dominions lapsed to the French crown.

RENEGADE, n. *rĕn'ĕ-gād*, or REN'EGA'DO, n. *-gā'dō* [Sp. *renegado;* It. *rinnegato;* F. *renégat*, an apostate—from L. *re*, back or again; *negārĕ*, to deny]: an apostate; one who renounces his faith; a deserter.

RENEGE, v. *rĕ-nēj'* [mid. L. *renegārĕ*, to deny—from L. *re*, back or again; *negārĕ*, to deny]: in *OE.*, to deny. RENEG'ING, imp. RENEGED', pp. *-nējd'*.

RENERVE, v. *rē-nĕrv'* [*re*, again, and *nerve*]: to give new vigor to.

RENEW, v. *rĕ-nū'* [*re*, again, and *new:* Ger. *erneuen*, to renew, to renovate]: to make new; to restore to a former good state; to repair; to rebuild; to revive; to begin again, as a course; to grant again or repeat, as a loan or a bill; to transform to a new life; to make again, as a treaty. RENEW'ING, imp.: N. act of making new; renewal. RENEWED', pp. *-nūd':* ADJ. repaired; re-established; repeated; revived. RENEW'ER, n. *-ĕr*, one who renews. RENEW'ABLE, a. *-ă-bl*, that may be renewed. RENEW'AL, n. *-ăl*,

act of forming anew; revival; restoration to a former good state; repetition of a loan, or the same bill; renewal of a bill of exchange is matter of agreement between the parties, and a new bill is granted in substitution for the old one by the party liable to pay—with the result of suspending the former bill in its operation till the renewed one arrives at maturity. RENEW'EDNESS, n. *-ĕd-nĕs*, the state of being renewed.

REN'FREW: ancient royal, parliamentary, and municipal burgh, cap. of the county of R., Scotland; on the s. bank of the Clyde, 6 m. w.n.w. of Glasgow. It contains an educational institution, the Renfrew Grammar School and Blythswood Testimonial, originally endowed by charter of Robert III. The Glasgow steamers touch here. Silk and muslin fabrics are woven; and many of the inhabitants are employed in iron-works and in ship-building, which industries have become important. Pop. (1871) 4,163; (1881) 5,115; (1891) 6,756.

RENFREW, *rĕn'frū* (anciently *Strathgryffe*): county in Scotland, 31 m. long, 13 broad; bounded n. and w. by the river and Firth of Clyde, s. by Ayrshire, e. and n. by Lanarkshire; 254 sq. m., or 162,428 acres; pop. (1861) 177,561; (1871) 216,947; (1891) 290,790; (1901) 268,980.

R. is very unequal in its surface, and consequently in the nature of its soil; the highest portion, composing two-thirds of its surface, reaches the height of 1,711 ft. above sea-level, and gradually declines to a plain of about 12,000 acres. R. was divided 1815 into the Upper and Lower Wards. Nearly two-thirds of the arable land is kept under grasses. There are extensive mineral deposits, constituting a great source of commerce and wealth. The minerals wrought are coal (accompanied always by iron), limestone, and sandstone. In commercial and manufacturing importance, R. is second only to Lanark of Scotch counties. The manufacture of silk, cotton, and muslin fabrics is extensive. The centre of these branches of industry is Paisley; but weaving is carried on in almost every village in the county. The good roads and railways, with the seaports of Greenock and Port Glasgow, afford ready transit both for home and foreign trade. The chief towns, besides these ports, are Renfrew (q.v.), Paisley (q.v.), and Johnstone (q.v.). Besides the Clyde, and some small streams, there are three rivers, called the Black Cart, the White Cart, and the Gryffe. Of the whole acreage of R. there were, 1880, 94,339 acres under all kinds of crops: 17,712 acres under corn crops, 8,494 under green crops, 18,321 in clover and grasses under rotation, and 49,467 in permanent pasture. There were in the county in the same year 2,300 horses kept for agricultural purposes, 25,049 cattle, 31,237 sheep, and 1,310 pigs. The valuation for 1884-5 was £708,298, exclusive of railways and public works, valued at £85,023.

R. was the chief patrimony of the Stewards of Scotland, granted to them 1404 by Robert III., since which time the eldest son of the reigning sovereign has borne the title of Baron of Renfrew.

RENI, *rā'nē:* town of Bessarabia, at the confluence of the Pruth and the Danube, on the left bank of both rivers. It carries on a considerable trade, exporting large quantities of grain. Pop. about 8,000.

RE'NI, Guido: see Guido Reni.

RENIER, *rĕh-ne-ā'*, Charles Alphonse Léon: archæologist: 1809, May 31—1885, June 13; b. Charleville, France. He was a close student, and in early life became famous; founded the *Review of Philology, Literature, and Ancient History*, and was ed. of *Courtin's Modern Encyclopedia*, 30 vols.; collected Roman inscriptions in Algeria and France for the Historical Soc., was director of the Sorbonne Library; and, 1861, became prof. of Roman antiquities in the College of France. He was a member of several learned societies, translated various ancient works, and wrote largely on antiquarian subjects. He died at Paris.

RENIFORM, a. *rē'nĭ-fawrm* [L. *rēnēs*, the kidneys or reins; *forma*, shape]: kidney-shaped; in *geol.*, applied to concretions of ironstone, limestone, etc., which have a flattish, oblong, or kidney-shaped form; in *bot.*, resembling the longitudinal section through a kidney: see also Renal.

RENNEL, *rĕn'ĕl*, James: English geographer: 1742, Dec. 3—1830, Mar. 29; b. near Chudleigh, Devonshire. He entered the navy as midshipman at the age of 15, but at the age of 24 he left the navy, and enlisted as an officer of engineers in the E. India Company's army, rising under Clive to the grade of major, and afterward was transferred to the post of surveyor-gen. of Bengal. While in the army, he had prepared and published a *Chart of the Bank and Currents of Cape Agulhas* (1768); and having retired from office (1782) with a pension of £600, he published a succession of geographical works on India, chief of which was *Memoirs of a Map of Hindustan* (Lond. 1783), new editions 1788, 93, and 1800. In 1792 he published *Memoir of the Geography of Africa:* 1798 he illustrated Mungo Park's travels by a map. The correctness of the ancient geographers being at that time much discussed, R. undertook the vindication of Herodotus (whose works he read in a translation), and published 1800 his *Geographical System of Herodotus Examined and Explained*, a fine combination of acuteness, sagacity, and research (2d ed. 1830). In 1814 appeared his *Observations on the Topography of the Plain of Troy;* and two years afterward, *Illustrations (chiefly Geographical) of the Expedition of the Younger Cyrus, etc., and of the Retreat of the Ten Thousand.* After his death, at London, there were found among his papers the *Investigation of the Atlantic Currents and those between the Atlantic and Indian Oceans* (Lond. 1832), compiled from a thorough examination of the logs of ships for about 40 years previous; and a *Treatise on the Comparative Geography of Western Asia*, with an atlas, anc. and modern (Lond. 1831), prepared by the royal command, and the publication partially defrayed at the king's expense. R. was one of the most remarkable men of his time; his works evince perseverance, industry, and rare sagacity.

RENNES, *rĕn* (*Redones* of the Romans, *Condate* of the Gauls): formerly cap. of the province of Bretagne, now the chief town of the dept. of Ille-et-Vilaine, is situated at the confluence of the rivers Ille and Vilaine, France. It is divided into the upper or new town, and the lower or old town. It is surrounded by ancient walls, flanked with towers, beyond which lie extensive suburbs. Three bridges unite the two divisions of the town, the older portions of which are on the left bank of the Vilaine, and are exposed to damage from inundations. The most noteworthy of the public buildings are the modern cathedral, whose interior is a very spacious hall of Grecian architecture; the stately Palais de Justice; the Hôtel de Ville; and the Lycée. R. is the see of a bishop, and the seat of a high court of jurisdiction for Ille-et-Vilaine and several adjacent depts., and has tribunals of first instance and of commerce. As the focus of main and branch lines of railway between Paris and the n.w. of the empire, and commanding good river and canal navigation, R. is favorably situated for commerce; and in addition to the transport of the abundant farm-produce of the neighboring districts, it carries on considerable trade in its own manufactures, which include cotton and linen yarns, flannel stockings, lace, sail-cloths, earthenware, etc. R. was almost reduced to ashes by a great fire, 1720. Pop. (1881) 60,974; (1891) 69,232; (1901) 74,676.

RENNET, n. *rĕn'nĕt* [F. *reinette*, a little queen—from *reine*, a queen]: a class of apples, including many of the most beautiful and pleasant varieties. They are of regular and globose shape; their skin has generally a rusty tinge, and often a kind of unctuousness to the touch; their flesh is finely granular; and besides being sweet and agreeably acid, they have a peculiar aromatic flavor. They do not keep well. The trees have a very regular habit of growth, and are suitable for dwarf standards.

RENNET, n. *rĕn'nĕt*, or RUNNET, n. *rŭn'nĕt* [Ger. *rinnen*, to run, coagulate; *rennse*, rennet: AS. *gerunnen*, curdled: Dut. *runnen*, to curdle; *runsel*, rennet]: the prepared inner membrane of the true stomach (see DIGESTION) of the sucking-calf; used for coagulating milk, and depending for its use on the acid gastric juice contained in it. It is prepared by removing the stomach from the animal as soon as killed, and scraping off the outer skin and all superfluous fatty matter. The membrane is then salted for some hours, and stretched out to dry. If perfectly dried, it will keep for a long time. When used, a small piece is taken and soaked in a little whey or water, and then added to the milk intended to be curdled.

RENNIE, *rĕn'ĭ*, GEORGE: English civil engineer: 1791, Jan. 3—1866, Mar. 30; b. Surrey; eldest son of John R. At the age of 16 he entered the Edinburgh Univ., and after a course of classics, mathematics, chemistry, and nat. philosophy, he returned to London 1811, and commenced the practical study of engineering under his father. In 1818, he was appointed supt. of the machinery of the Mint, and

at the same time aided his father in planning and designing several of his later works. After his father's death 1821, R. entered into partnership with his younger brother, John (afterward Sir John R.), as engineers and machinery constructors. The firm did an immense business, including the execution of most of the works planned by the elder R., and the completion of those which he had left unfinished. Their operations included construction of bridges, harbors, docks, ship-yard and dredging machinery, steam-factories, in Great Britain and on the continent, and many of the great naval works at Sebastopol, Cronstadt, Odessa, Nicolaiev, and in the principal ports of England; they made the coining machinery for the mints at Calcutta, Bombay, Lisbon, Mexico, and Peru; the biscuit, chocolate, and flour mills at Deptford, Gosport, and Plymouth; and furnished marine engines for the warships of England, Russia, France, Italy, Mexico, etc. Besides these multifarious labors, they built ships of wood and iron, drained large tracts of land in the midland counties of England; and R. superintended the construction of several continental railways. He was elected a fellow of the Royal Society 1822. He is the author of 'Experiments on the Strength of Materials,' 'The Frictions of Solids,' and 'The Frictions of Fluids,' in the *Philosophical Transactions*.—His brother, Sir JOHN (1794–1874), was knighted on the opening of the new London Bridge (1831), which he executed from his father's designs. He designed and executed Southwark and Waterloo bridges; and completed the drainage of the Lincolnshire coast, begun by his father. See his *Autobiography* (1875).

RENNIE, JOHN: English civil engineer: 1761, June 7—1821, Oct. 16; b. at Phantassie, near East Linton, E. Lothian, Scotland. His preliminary education was obtained at the parish-school of E. Linton, and supplemented by two years at Dunbar, where he was taught pure mathematics. At Edinburgh he attended lectures on nat. philosophy by Dr. Robison, and on chemistry by Dr. Black (q.v.). In 1780 he was taken into employment at the works of Boulton and Watt, at Soho, near Birmingham. Here his mechanical genius soon showed itself; and so highly did Watt esteem R., that he gave him, 1789, sole direction of the construction and fitting-up of the machinery of the Albion Mills, London; and the ingenious improvements effected in the connecting wheel-work were so striking, that R. at once rose into general notice as an engineer. Abundance of mill-work flowed in on him, and the thorough efficiency of his workmanship increased his fame. To this branch of engineering he added, about 1799, the construction of bridges. The elegance and solidity of his constructions, the chief of which were at Kelso, Leeds, Musselburgh, Newton-Stewart, Boston, New Galloway (with other places afterward mentioned), were universally admired. R.'s greatest work in this department was the Waterloo Bridge over the Thames, said to be the noblest structure of its kind in the world, and certainly combining in the happiest proportions the qualities of grandeur and simplicity. I

was commenced 1811, and finished in less than six years, at a cost of more than £1,000,000. Another of his works is the Southwark Bridge, built on a new principle, cast-iron arches resting on stone piers; finished in four years at an expense of £800,000. He also drew up the plan for the London Bridge, which was not commenced till after his death. He superintended the construction of several canals, chief of which was the Kennet and Avon canal between Newbury and Bath. The London Docks, the E. and W. India Docks at Blackwall, the Prince's Dock at Liverpool, and others were designed, and wholly or partially executed under his superintendence. He also planned many improvements on harbors and on the dock-yards of Portsmouth, Chatham, Sheerness, and Plymouth; executing at Plymouth the most remarkable of all his naval works, the celebrated Breakwater. Rennie's great merit as engineer consisted in his almost intuitive perception of what was proper to be done to effect the assigned purpose. Another striking characteristic of his works is the remarkable combination in them of beauty and durability. In this respect Rennie had no rival; and though his works are frequently objected to on the ground of expensiveness, yet their lasting qualities will in the end more than compensate for this. In person, Rennie was of extraordinary stature and herculean strength—characteristics which have distinguished his family.

RENO, *rē'nō*, JESSE LEE: soldier: 1823, June 20—1862, Sep. 14; b. Wheeling, W. Va. He graduated from West Point 1846; was in the principal battles of the Mexican war, and at Cerro Gordo and Chapultepec rendered distinguished service, for which he was brevetted first lieut. and capt. respectively. He taught for a while at West Point, was connected with the ordnance board at the Washington arsenal, 1851-53, afterward made surveys in Minnesota, was chief of ordnance in Utah, and was commander of the Mount Vernon, Ala., arsenal for some time previous to its capture by the Confederate forces 1861. He was promoted brig.gen.vols. 1861, and maj.gen.vols. 1862, commanded a brigade in Gen. Burnside's N. C. expedition, and led the 9th army corps at Manassas and Chantilly. This brilliant officer was killed while leading this corps in an assault at the battle of South Mountain.

RENO: city, county-seat of Washoe co., Nevada; on the Truckee river, and on the California & O., the Southern Pacific, and the Virginia & T. railroads; in the extreme western part of the state, about 30 m. s. of Carson City. It was settled in 1858 by eastern emigrants who had started for California. It was incorporated in 1869, and in 1901 was chartered as a city. It is in a farming and stock-raising region, and is the most important and largest city in the state. The chief industrial establishments are railroad machine shops, which have 2,200 employees; abattoir and packing house, 120 employees; electric-power plant, 50; pressed brick works, 25, and a

number of smaller manufactories. The trade is chiefly in farm products, live-stock, and manufactures. It is an important distributing point for a vast territory. The principal public buildings are a government building, eight churches, and the Nevada State Hospital for Mental Diseases. The educational institutions are the State University, opened in 1886, State Agricultural College and Experiment Station, a normal school, Academy of Our Lady, public and parish schools, and a Carnegie Library. The three banks have a combined capital of $1,500,000, and the annual amount of business is $38,000,000. The government is vested in a mayor and a city council of five members, all of whom are elected by the people. The population in 1910 was 10,867.

RENOIR, *rĕ-nwâr,* AUGUSTE: French painter: b. Limoges 1841. He exhibited at the first Impressionist Salon in 1874 after studying under the impressionist Monet and others of the same school. While he paints figures, principally, and possesses singular skill in depicting flesh color and skin texture, as well as facial expression, he has remarkable success in landscape, in fruit and in flowers, which he sets on the canvas with astonishing boldness, and vividness of presentation, and he is certainly one of the most original and independent of the school to which he belongs. His *Jeunes Filles au Piano* is a good example of his qualities. Among his portraits are those of Claude Monet, his master, and the composer Wagner. Consult: Duret, *Les Peintres Impressionistes* (1879).

RENOUF, *rĕ-nôf,* EMILE: French painter: b. Paris, 1845; d. 1894. He chose for his subjects the scenery of the sea and incidents in the lives of those who live on the seashore, fishermen, etc., but he also did some good work in landscape and genre. His fine marine *After the Storm* is in the New York Metropolitan Museum, and his *Helping Hand* (a child holding to an oar, while a sturdy fisherman rows), is in the Corcoran Gallery, Washington. While in New York (1887-8) he painted *Brooklyn Bridge,* which at present is in the public gallery at Havre. In 1883 he was awarded a first class medal at Munich.

RENOUNCE, v. *rĕ-nowns'* [L. *renuncĭārĕ,* to retract, to renounce—from *re,* back or again; *nuncĭō,* I make known; *nuncĭus,* a messenger: It. *rinunziare:* F. *renoncer*]: to disown; to repudiate; to reject; to give up; to refuse to acknowledge or own; to abandon; in *card-playing,* not to follow a suit when a person has a card of the same sort; to revoke: N. act of renouncing. RENOUN'CING, imp.: N. act of disowning or rejecting. RENOUNCED, pp. *rĕ-nownst'.* RENOUN'CER, n. *-sĕr,* one who renounces. RENOUNCE'MENT, n. *-mĕnt,* the act of disclaiming or rejecting.—SYN. of 'renounce, v.': to disown; abandon; forsake; abdicate; resign; forego; cast off; disavow; disclaim; abjure; deny; recant; quit; relinquish; give up; repudiate; revoke; abnegate.

RENOVATE, v. *rĕn'ō-vāt* [L. *renovātus*, renewed, restored—from *re*, again; *novo*, I make new; *novus*, new. It. *rinovare*]: to renew; to refresh: to restore to the first state, or one resembling it. REN'OVATING, imp.: ADJ. renewing; restoring. REN'OVATED, pp.: ADJ. made new, fresh, or vigorous. REN'OVATER, or REN'OVATOR, n. *-vā-ter*, he or that which renovates. REN'OVA'TION, n. *-vā'shŭn* [F.—L.]: the act of renewing after decay; state of being renewed; renewal.

RENOWN, n. *rĕ-nown'* [OF. *renon;* F. *renom, renommée*, renown, fame: Sp. *renombre*, a surname, renown—from L. *re*, again; *nomen*, a name]: widespread reputation; fame; celebrity. RENOWNED', a. *-nownd'*, famous; celebrated; remarkable. RENOWN'EDLY, ad. *-ĕd-lĭ*. RENOWN', v. in *OE.*, to make famous.—SYN. of 'renowned': distinguished; noted; eminent; celebrated; wonderful; remarkable; famed; famous.

RENSSELAER, *rĕn'se-lĕr*, New York, city in co. of the same name, on the Hudson River opposite Albany, and on the Boston & Albany, and N. Y. Central & Hudson River R. R.'s. It was settled by the Dutch, who called the place Greenbush, a title which it retained until it was incorporated as a city in 1897, when it took its present name. Three large bridges span the Hudson, connecting Rensselaer with Albany. It also has electric railway connection with Albany, Troy, and other points, and all steamboats plying the upper Hudson land there. The chief manufacturing establishments are a felt factory, aniline works, tannery, shirt-waist factory, etc. A large number of persons are employed in the offices of the railroads and steamboats, and in the factories at Albany and Troy. There are 10 churches, 2 public schools, 1 parish school, St. John's Academy, and St. John's Orphan Asylum. The government is vested in a mayor and a common council of 10 members, elected biennially. The village of Bath was annexed in 1902. Pop. (1910) 10,711.

RENSSELAER POLYTECHNIC INSTITUTE, *rĕns'-sĕ-ler pŏl-ĭ-tĕk'nĭk:* at Troy, N. Y.; founded by Stephen Van Rensselaer 1824 as a school of theoretical and practical science; incorporated 1826; reorganized on the basis of a general polytechnic institute 1849. The buildings comprise the main hall, 115 x 50 ft., 4 stories high, containing recitation, lecture, and drawing rooms, natural history cabinets, and the library; Winslow laboratory, 70 x 40 ft., 3 stories high, named after a former pres. of the institute, containing the metallurgical and chemical laboratories, and recitation, lecture, and apparatus rooms; Williams Proudfit observatory, 30 ft. sq., 2 stories high in centre, with n., s., and e wings, total length, 76 ft., width 60 ft.; Ranken house, occupied by the department of mechanics; and gymnasium, 80 x 44 ft., supplied with improved apparatus and a variety of baths. In 1902 the institute had 21 instructors, 318 students, and 6,641 vols. in its library.

RENT, n. *rēnt* [F. *rente;* Sp. *renta;* It. *rendita*, revenues, yearly rents—from L. *redditus*, given back, restored; *reddĕrĕ*, to restore—from *re*, back; *dărĕ*, to give]: revenue; annual payment; the yearly sum paid by an occupier or lessee to a proprietor (see below: also LANDLORD AND TENANT): V. to hold or occupy by the payment of a yearly sum; to lease or let for an annual payment. RENT'ING, imp. RENT'ED, pp. RENT'ER, pp. *-ẽr*, one who rents; a tenant. RENT'ABLE, a. *-ă-bl*, that may be rented. RENTAL, n. *rĕnt'ăl*, a list or account of rents; the whole rents of an estate. RENT-CHARGE, a yearly charge upon an estate, granted or secured by deed. RENT-ROLL, a schedule or list of rents payable at stated times.

RENT, n. *rĕnt* [see REND]: a tear; a fissure; a schism. —SYN.: rupture; tear; laceration; break; fracture; breach; fissure.

RENT, *rĕnt*, in Political Economy: term applied to the profits drawn from land, houses, or other immovable property, often called 'real estate.' It is colloquially applied to these profits only when the property is hired by a tenant who pays for the use of it. It was long before a distinction was made between such letting and hiring and that of any other commodity, such as a ship or a wagon. But political economists found that there was a fundamental distinction, affecting large questions not only in political economy but in state politics. These are connected with the specialty that other profits, whether from the letting of articles or otherwise, arise out of the acts of those to whom the articles belong; but the rent of land is a fund that exists through external causes, over which the owner has no control, and in certain conditions *must* exist whoever may draw it. When 'the theory of rent,' as it was termed, dawned upon the economists, and was but partially seen, they developed it in different formulas, which appeared to be different theories, but in reality were crude forms, tending, though complicated in themselves, to the simple principle, that the pressure of population on the means of subsistence creates rent on those lands where the means of subsistence can most easily be produced. In an enlarging and aggrandizing country, the phenomenon is in constant gradual operation; but it will be best illustrated by supposing an instance of sudden and extensive action. Suppose there is an island in which 1,000 people find enough for their wants in the natural produce of its most fertile soil. Suddenly 500 people become added to the population, and an increase of the existing food to the extent of one-half is required. The shape in which this increase will take place will be competition, by offer of an enhanced price for food, and that enhanced price will tempt people to bring under cultivation the inferior lands. The owners, however, of the old rich lands will not see their neighbors getting prices a third higher than themselves; they, too, will sell their produce at the market price, and the difference between this and the old value will be *rent*. It is of no moment, in the economic question of the existence of the element, that the owner of the rich soil does not let it; if he

eats his bread cheaper than his neighbor, that is merely the form in which he derives the advantages of *rent*. The importance of this view, both in politics and economics, is that rent *must exist, and cannot be got rid of*. Whoever has at his command better land than the worst that is cultivated holds rent. It is in vain, therefore, to think of destroying the 'monopoly,' as it is sometimes called, of landowners; it revives as naturally by an economic law, as water finds its level by a physical law. If you were to divide all the land in the country to-morrow in equal portions among the inhabitants, the value of it would be greatly deteriorated by the change, but in time some patches would become more valuable than others, and worth 'rent,' while the frugal and industrious would gradually be absorbing the portions of the idle and extravagant, and accumulating estates. In fact, to the mere consumer, it is of no moment who has the land, provided it is in the hands that can render it most productive. To this end, it is more profitable that the land of a country should be in the market, and obtainable by those who, being ready to give most for it, are able to work it to most profit. In France, where land is divided among the owner's descendants, the consequent breaking up into small patches, not necessarily in the hands of persons able or willing to cultivate them, is detrimental to the value of the land at large.

RENTE, n. *rângt* [F.]: yearly income; shares; French government stock. RENTIER, n. *râng'tĭ-ā'*, one who has an income from land or stocks; a proprietor.

RENTER, v. *rĕnt'ėr* [F. *rentraire*, to fine-draw—from *re*, back; *en*, in; *traire*—from L. *trahĕrĕ*, to draw]: to fine-draw; to sew together two edges of cloth so finely that the seam is scarcely visible; to work new warp into a piece of damaged tapestry, and so restore it. RENT'ERING, imp. RENT'ERED, pp. *-ėrd*. RENT'ERER, n. *-ėr-ėr*, a fine-drawer.

RENTON, *rĕn'ton*: small town in the county of Dumbarton, and two m. n. of the town of Dumbarton, on the right bank of the Leven. Smollett, novelist and historian, was born in the neighborhood, and is commemorated by a monument in the town. Pop. (1881) 4,319; (1891) 5,458.

RENUMERATE, v. *rē-nū'mėr-āt* [*re*, again, and *numerate*]: to recount.

RENUENT, a. *rĕn'ū-ėnt* [L. *renuens*, pp. of *renuo*—from *re*, back; *nuo*, I nod]: throwing back the head; applied specifically to two muscles which perform this function.

RENUNCIATION, n. *rĕ-nŭn'sĭ-ā'shŭn* [see RENOUNCE]: act of renouncing; disavowal; denial; abandonment: in *law*, the abandonment of a right.—SYN.: disavowal; rejection; recantation; abjuration; relinquishment; renouncement; disownment; disavowment; disclaimer.

RENVERSE, a. *rĕn-vėrs'* [F. *renverser*, to throw down—from *re*, back; *en*, in; L. *versārĕ*—from *vertĕrĕ*, to turn]: in *her.*, reverse; set with the head downward or contrary to the natural position: V. in *OE.*, to reverse; to overthrow. RENVERSE'MENT, in *OE.*, the act of reversing.

RENWICK, *rĕn'wĭk*, JAMES, LL.D.: American physicist: 1790, May 30—1863, Jan. 12; b. Liverpool, England, on his parents' journey home from Scotland: his mother was daughter of a Scotch clergyman named Jeffrey, and was a noted beauty to whom Burns gave poetic tribute in some of his songs. R. graduated at Columbia College, New York, 1807. In 1820, he was appointed prof. of chemistry and physics in that college, holding the office till 1854. In 1838, he was appointed by the U. S. govt. one of the commissioners to explore the boundary, then settled by the Ashburton treaty, between Maine and New Brunswick. In addition to his collegiate duties, he wrote the biographies of Robert Fulton, David Rittenhouse, and Count Rumford, in Sparks's *American Biography; Memoir of De Witt Clinton* (1834); *Treatise on the Steam-engine* (1840–1); *Elements of Mechanics* (Phil. 1832); beside many translations, reviews, articles in periodicals, etc. His text-books, *Outlines of* Natural *Philosophy* (1832), and *Outlines of Geology* (1838), were the first works of their kind published in the United States, and, with his other educational works, have passed through numerous editions.

REN'WICK, JAMES: 1818, Nov. 3–1895, June 23: architect: b. N.Y.; son of James R. He graduated from Columbia College 1836, became a civil engineer, and was employed by the Erie Railroad Company; was supt. of the construction of the reservoir at Fifth avenue and Forty-second street, New York; but soon turned his attention to architecture. Among the buildings in New York for which he made the designs are Grace Church, the Rom. Catholic Cathedral, the Church of the Covenant (Presb.), Booth's Theatre, and the Young Men's Christian Association building. He also planned many fine buildings in other cities, including the Corcoran Gallery at Washington.

REOBTAIN, v. *rē'ŏb-tān'* [*re*, again, and *obtain*]: to obtain again. RE'OBTAIN'ABLE, a. capable of being obtained again.

REOCCUPY, v. *rē-ŏk'kū-pī* [*re*, again, and *occupy*]: to occupy again.

REOPEN, v. *rē-ō'pn* [*re*, and *open*]: to open again.

REOPPOSE, v. *rē'ŏp-pōz'* [*re*, again, and *oppose*]: to oppose again.

REORDAIN, v. *rē'ŏr-dān'* [*re*, again, and *ordain*]: to ordain again.

REORDER, v. *rē-ŏr'dėr* [*re*, again, and *order*]: to order a second time.

REORGANIZE, v. *rē-ŏr'găn-īz* [*re*, and *organize*]: to reduce again to a regular body, or to a system. REOR'GANIZA'TION, n. the act of organizing anew.

REP, or REPP, a. *rĕp* [a corruption of *rib:* comp. F. *reps*]: having the surface of a cord-like or ribbed appearance—applied to a certain style of fabrics: N. a fabric having a corded or ribbed appearance.

REPACIFY, v. *rē-păs'ĭ-fī* [*re*, again, and *pacify*]: to pacify again.

REPACK, v. *rē-păk'* [*re*, again, and *pack*]: to pack a second time.

REPAID, v. *rē-pād'*: pt. and pp. of REPAY, which see.

REPAINT, v. *rē-pānt'* [*re*, again, and *paint*]: to paint anew.

REPAIR, v. *rĕ-pār'* [F. *réparer*, to repair—from L. *reparārĕ*, to restore, to renew—from *re*, again; *paro*, I make or get ready: It. *reparare*]: to restore to a good state after decay or injury; to fill up anew, as a breach or rent; to mend; to make amends for, as for an injury: N. restoration after decay, waste, or injury; supply of loss (see REPAIRS). REPAIR'ING, imp.: N. the act of restoring after injury or dilapidation. REPAIRED', pp. *-pārd'*. REPAIR'ER, n. *-ĕr*, one who repairs. REPAIR'MENT, n. *-mĕnt*, act of repairing. —SYN. of 'repair, v.': to restore; recover; amend; renew; mend; retrieve; recruit.

REPAIR, v. *rĕ-pār'* [F. *repaire*, a lodging, a haunt; *repairer*, to haunt, to frequent: mid. L. *repatrĭārĕ*, to go home again—from L. *re*, back; *patrĭa*, a fatherland—from *pater*, a father]: to resort to; to betake one's self; to return, as to one's house; to resort: N. in *OE.*, a haunt or resort. REPAIR'ING, imp. REPAIRED', pp. *-pārd'*.

REPAIRS': technical and common term to denote the repairs made by a landlord or tenant in the building leased. What are 'necessary repairs,' has been the subject of much litigation, but the term is now generally held to include everything necessary to keep the premises in tenantable order; but the extent of the R. is generally to be measured by the age and class of buildings. There is an erroneous popular notion that the duty to make R. belongs to the landlord; but in the absence of a covenant or an express agreement on the part of the landlord to make R., the tenant is bound to repair; the obligation of a landlord to repair rests solely on an express contract so to do, and no agreement to repair on his part will be implied or enlarged by construction; and in the absence of an agreement or of some statutory provision, not even in case the premises are destroyed by fire, is the landlord bound to rebuild or to repair; and the destruction or untenantability caused by the fire will be no excuse for the non-payment of rent. But this last harsh rule of the common law has now been abolished by statutory provisions in most of the states, by which the rent ceases in case the building is destroyed or made untenantable and unfit for occupancy by the elements without fault or neglect on the part of the tenant, and the lessee may quit and surrender the premises: also it has been held that a covenant to repair means to rebuild. While the landlord is under no obligation to make R., yet if he undertakes to make them, he is bound to make them properly and skilfully, otherwise he renders himself liable for the injuries occasioned to his tenant by his negligent R. Unless the landlord reserves the right to enter the premises to make R, he is guilty of trespass if he does so, even

though the lessee covenanted to make the R. but refused to do so. When the landlord covenants to make R. and then refuses to do so, the tenant, after notice to the landlord, may make them himself and recover the expense thereof from the landlord; or he may leave the premises unrepaired and recover from the landlord the damages sustained by reason of breach of the covenant to repair. The remedy of the landlord for a breach of the tenant's covenant to repair is an ordinary action for damages for a breach of the covenant, or a Re-entry (q.v.).

Repand Leaf of *Solanum nigrum.*

REPAND, a. *rĕ-pănd'* [L. *repan'dus*, bent backward, turned up—from *re*, back; *pandus*, bent, crooked]: in *bot.*, applied to a leaf when its margin is undulated, and unequally dilated; strictly, applied to a leaf whose margin is toothed with concave intervals between the teeth. REPAN'DOUS, a. *-păn'dŭs*, bent or curved backward.

REPARATION, n. *rĕp'ă-rā'shŭn* [F. *réparation*—from L. *reparatĭōnem*, restoration, renewal—from L. *reparārĕ*, to restore, to renew: Sp. *reparacion*, reparation (see REPAIR 1)]: the act of restoring to a good state; supply of what is wasted; renewal; satisfaction or compensation for injury; amends. REP'ARABLE, a. *-ră-bl*, that may be repaired, amended, or restored. REP'ARABLY, ad. *-blĭ*. REPARATIVE, a. *rĕ-păr'ă-tĭv*, that amends defects; that repairs or makes good: N. that which repairs.—SYN. of 'reparation': restitution; repair; compensation; amends; restoration;—of 'reparable': recoverable; retrievable; restorable.

REPARTEE, n. *rĕp'âr-tē'* [F. *repartie*, a reply—from *repartir*, to return quickly a thrust or a blow, to reply —*lit.*, to redivide; *re*, again; *partir*, to divide—from L. *pars* or *partem*, a part]: a smart, ready, and witty reply; a retort.

REPASS, v. *rē-pâs'* [*re*, back or again, and *pass:* F. *repasser*]: to pass or travel back.

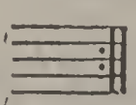
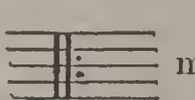
REPASSANT, a. *rē-păs'ant:* in *her.*, term applied when two lions or other animals are borne going contrary ways, one of which is passant, by walking toward the dexter side of the shield in the usual way, and the other repassant by going toward the sinister.

REPAST, n. *rĕ-pâst'* [OF. *repast;* F. *repas*—from. mid. L. *repastus*, a repast—from L. *re*, again; *pastus*, food—from *pascor*, I feed]: a meal; food taken; victuals: V. in *OE.*, to feed; to feast. REPAS'TURE, n. *-tūr*, in *OE.*, entertainment.

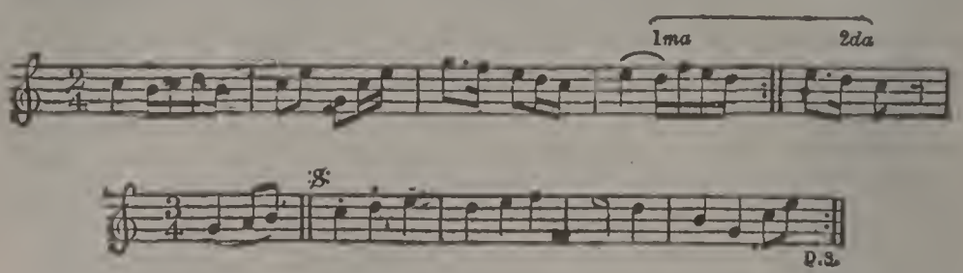
REPAY, v. *rĕ-pā'* [*re*, back, and *pay*]: to pay back, as money; to refund; to reimburse; to recompense; to requite. REPAY'ING, imp. REPAID', pp. *-pād'*. REPAY'ABLE, a. *-pā'ă-bl*, that may be repaid; that is to be refunded. REPAY'MENT, n. *-mĕnt*, the money repaid.—SYN. of 'repay': to pay back; recompense; compensate; reimburse.

REPEAL, v. *rĕ-pēl'* [F. *rappeler*, to call back—from L. *re*, back; *appello*, I call upon, I speak to]: to revoke; to make void; to abolish; to abrogate: N. the act of annulling or making void; revocation. REPEAL'ING, imp. REPEALED', pp. *-pēld'*. REPEAL'ABLE, a. *-ă-bl*, capable of being repealed or revoked. REPEAL'ABLENESS, n. *-nĕs*, capability of being repealed. REPEAL'ER, n. *-ẽr*, one who agitates the repeal of a law, etc.—SYN. of 'repeal, v.': to revoke; rescind; recall; annul; abolish; abrogate; reverse; cancel; void.

REPEAT, v. *rĕ-pēt'* [F. *répéter*, to repeat—from L. *repetĕrĕ*, to resume, to renew—from *re*, back or again; *peto*, I seek: It. *repetere*]: to do or utter again; to rehearse; to quote or recite from memory: N. in *music* (see below). REPEAT'ING, imp. REPEAT'ED, pp.: ADJ. done or spoken again; frequent. REPEAT'ER, n. *-ẽr*, that which repeats—applied to a watch that strikes the hours; in *arith.*, a number or figure of a decimal which is repeated indefinitely. REPEAT'EDLY, ad. *-lĭ*, again and again. REPEATING CIRCLE, an instrument for measuring the angular distance of two objects.—SYN. of 'repeat': to iterate; recite; renew; relate; rehearse; recapitulate; reiterate.

REPEAT', in Music: mark indicating repetition of the part or strain to which it applies: it consists of two perpendicular lines through the staff, with dots before them and between the lines of the staff—  placed at the close of the strain to be repeated. When a series of notes has to be repeated from the beginning of the piece, this sign is inserted at the place whence return is to be made to the beginning. But when the repetition is not from the beginning a reversed repeat  must be placed at the point where the repetition begins, the passage to be repeated being inclosed by the two signs. When the following strain also is to be repeated, the dots are placed on both sides of the repeating sign . When a passage of some length is to be repeated, with an alteration at the end, a curved line with the figure 1, *1ma*, or *prima volta* [Ital. first time], is placed over the part to

be altered, the sign of the repeat follows, and then the altered termination with *2, 2da,* or *seconda volta* [Ital. second time], placed over it.



The words *Da Capo,* abbreviated D. C. [Ital. from the beginning], indicate that a piece is to be repeated from the beginning. But if that repetition is to extend only to a particular point, at which the movement or piece finally closes, that point is indicated by the word *Fine* [Ital. end], or the letter F. If, however, the repetition is to begin, not from the commencement of the piece, but from another point, the sign :𝄋: is placed over the point, and the words *dal segno,* abbreviated D. S. [Ital. from the sign], are used to indicate the point after which the repetition is to begin.

REPEL, v. *rĕ-pĕl′* [L. *repellĕrĕ,* to drive or thrust back—from *re,* back; *pello,* I drive: It. *repellere*]: to drive back; to repulse; to check the advance of; to act with force in opposition to force impressed; to resist. REPEL′LING, imp.: ADJ. driving back; resisting approach. REPELLED′, pp. *-pĕld′.* REPEL′LER, n. *-ĕr,* he or that which repels. REPEL′LENT, a. *-ĕnt,* able or tending to repel: N. a medicine which drives back morbid humors. REPEL′LENCY, n. *-ĕn-sĭ,* the principle of repulsion.—SYN. of 'repel': to oppose; reject; refuse; repulse; resist.

REPENT, a. *rē′pĕnt* [L. *repens* or *repen′tem,* creeping—from *repo,* I creep]: in *bot.,* lying flat upon the ground, and emitting roots along the under surface.

REPENT, v. *rĕ-pĕnt′* [F. *repentir,* to repent—from L. *re,* again; *pœnĭtērĕ,* to cause to repent—from *pœna,* pain: It. *repentere,* to repent]: to feel sorrow or regret for something done or spoken; to express regret for something past; to change the mind; to remember with sorrow; to feel such sorrow for sin as to produce amendment of life. REPENT′ING, imp.: ADJ. grieving for the past; feeling contrition for sins: N. act of repentance. REPENT′ED, pp. REPENT′ANT, a. *-ănt* [F.—L.]: sorrowful on account of past conduct or misdeeds; expressing or showing sorrow for the past. REPENT′ANTLY, ad. *-lĭ.* REPENT′ANCE, n. *-ăns* [F.—L.]: the sorrow for sin which produces newness of life; sorrow for anything done or said. REPENT′INGLY, ad. *-lĭ.*—SYN. of 'repentance': penitence; compunction; contrition; remorse; regret; contriteness.

REPEOPLE, v. *rē-pē′pl* [*re,* again, and *people*]: to people anew; to furnish again with a stock of inhabitants. REPEO′PLING, imp. *-plĭng:* N. the act of stocking with people anew. REPEO′PLED, pp. *-pld.*

REPERCUSSION, n. *rē'pėr-kŭsh'ŭn* [F. *répercussion*, repercussion—from L. *repercussiōnem*, a rebounding—from *re*, back or again; *percutĕrĕ*, *percussum*, to strike or beat: It. *ripercussione* (see PERCUSSION)]: the act of driving back; a rebound; reverberation; in *music*, frequent repetition of the same sound. RE'PERCUS'SIVE, a. *-kŭs'sĭv*, having the power of driving back; driven back; causing to reverberate.

RÉPERTOIRE, n. *rā'pėr-twâr'* [F.]: a repertory—which see.

REPERTORY, n. *rĕp'ėr-tėr'ĭ* [F. *répertoire*, a repertory —from mid. L. *repertōrĭum*, an inventory, catalogue—from L. *reperĭō*, I find out or discover: It. *repertorio*, a repertory]: a place in which things are arranged in an orderly manner, so as to be easily found; a magazine; a treasury.

REPETEND, a. *rĕp'ĕ-tĕnd* [L. *repeten'dus*, to be brought back; *repeto*, I fetch back—from *re*, back or again; *peto*, I seek]: in *arith.*, that part of a repeating decimal which recurs continually *ad infinitum*.

REPETITION, n. *rĕp'ĕ-tĭsh'ŭn* [F. *répétition*, repetition —from L. *repetitĭōnem*, a repetition—from *re*, again; *peto*, I seek: It. *repetizione*]: the act of repeating; recital; rehearsal; tautology; in *Scotch law*, repayment of money received in mistake or ignorance; money paid by mistake as to law cannot be recovered, but only if paid under mistake as to fact. REP'ETI'TIONAL, a. *-ăl*, containing repetition. REPETITIVE, a. *rė-pĕt'ĭ-tĭv*, containing repetition; repeating.

REPINE, v. *rė-pīn'* [*re*, again, and *pine* 2, which see]: to feel a discontent which preys on the spirits; to fret one's self; to be discontented; to murmur. REPIN'ING, imp.: ADJ. disposed to murmur or complain: N. the act of fretting and brooding over a thing. REPINED', pp. *-pīnd'*. REPIN'ER, n. *-ėr*, one who repines. REPIN'INGLY, ad. *-lĭ*.

REPLACE, v. *rė-plās'* [*re*, again, and *place:* F. *replacer*]: to put again in a former position; to put in a new place; to refund; to put another in the place of one removed; to succeed. REPLAC'ING, imp. REPLACED', pp. *-plāst'*. REPLACE'MENT, n. *-mĕnt*, exchange of places; substitution.

REPLAIT, v. *rē-plāt'* [*re*, again, and *plait*]: to plait or fold again.

REPLANT, v. *rē-plănt'* [*re*, again, and *plant:* F. *replanter*]: to plant again.

REPLEAD, v. *rē-plēd'* [*re*, again, and *plead*]: to plead again. REPLEAD'ER, n. *-ėr*, in *law*, a second pleading, or the right to plead again.

REPLENISH, v. *rė-plĕn'ĭsh* [OF. *replenir*, to replenish; *replenissant*, replenishing: L. *re*, again; *plēnus*, full]: to fill; to stock with numbers or abundance; in *OE.*, to complete; to finish, to consummate. REPLEN'ISHING, imp. REPLEN'ISHED, pp. *-ĭsht*, abundantly supplied. REPLEN'ISHER, n. *-ėr*, one who replenishes. REPLEN'ISHMENT, n. *-mĕnt*, act of replenishing or the state of being replenished.

REPLETE, a. *rē-plēt'* [F. *replet*—from L. *replētus*, filled—from *re*, again; *plērĕ*, to fill: It. *repleto*]: completely filled; full; abounding. REPLETE'NESS, n. *-nĕs*, the state of being replete. REPLETION, n. *rē-plē'shŭn*, superabundant fulness; plethora. REPLE'TIVE, a. *-tĭv*, tending to fill or replenish. REPLE'TIVELY, ad. *-lĭ*.

REPLEVIN: see REPLEVY.

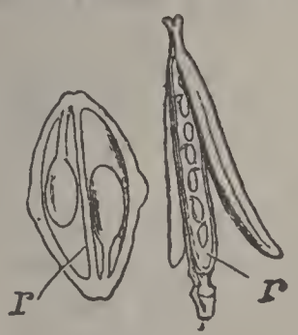
REPLEVY, v. *rĕ-plĕv'ĭ* [L. *re*, again; OF. *plevir*, to promise, to answer for; *plevine*, warranty (see PLEDGE)]: to take back or reclaim, as cattle or goods, upon giving security to try the rights of distraint at law; in *law*, to take back or set at liberty anything seized upon security being given. REPLEV'YING, imp. REPLEV'IED, pp. *-plĕv'ĭd*. REPLEV'IABLE, a. *-ĭ-ă-bl*, that may be recovered from illegal distraint. REPLEV'IN, n. *-ĭn*, in *law*, an action to recover possession of goods or cattle wrongfully taken away. By the common law whenever goods of a person were wrongfully taken out of the possession of another, the person from whom they were taken—if he wished to have them restored and to try the legality of the seizure—might get back the goods by giving security to the sheriff of the county to prosecute an action, in which the injustice of the taking would have to be proved; the process issued to the sheriff in such an action was called a writ of replevin. In the U. S., however, the common law has been deviated from, and the action of R. is not confined to cases where goods have been wrongfully distrained, but the remedy may be applied in all cases where personal property has been unlawfully taken or detained from the rightful owner. The object of the action is to get back the specific property taken, and not to recover damages as in an action for conversion; both of these actions are concurrent remedies, and either may be adopted at the election of the plaintiff; and in some of the states a mixed action for the return and damages for the detention of the property may be brought. In most of the states the action of R. is governed by statutory regulations, substantially the same in their general features in the different states. In some of these statutes the action is termed 'action for the claim and delivery of personal property;' in others, 'an action to recover a chattel.'

REPLICA, n. *rĕp'lĭ-kâ* [It. *replica*, a repetition—from L. *re*, again; *plico*, I fold]: a copy of an original picture done by the same master.

REPLICATE, a. *rĕp'lĭ-kāt* [L. *replĭcātus*, folded or rolled back—from *re*, back; *plico*, I fold]: in *bot.*, doubled down, so that the upper part comes in contact with the lower.

REPLICATION, n. *rĕp'lĭ-kā'shŭn* [L. *replicātĭōnem*, a folding or rolling back again (see REPLY)]: a response; an answer: in *law*, the plaintiff's answer to the defendant's plea.

REPLIED, REPLIER, etc.: see under REPLY.



Replum.

REPLUM, n. *rē′plŭm* [L. *replum*, a door-case, the leaf of a door]: in *bot.*, a longitudinal division in a pod formed by the placenta, as in *Cruciferæ;* the persistent portion of some pericarps after the valves have fallen away; a spurious dissepiment.

REPLY, v. *rĕ-plī′* [F. *replier*, to fold again; *répliquer*, to reply—from L. *replĭcārĕ*, to fold or roll back—from *re*, back; *plico*, I fold: It. *replicare*]: to make a return in words or in writing to something which has been said or written by another; to answer; to respond: N. an answer; a rejoinder; that which is said or written in answer to another. REPLY′ING, imp. REPLIED′, pp. *-plīd′*. REPLI′ER, n. *-ėr*, one who replies.

REPOLISH, v. *rē-pŏl'ĭsh* [*re*, again, and *polish*]: to polish again.

REPONE, v. *rē-pōn'* [L. *reponĕrĕ*, to replace, to restore—from *re*, back or again; *ponĕrĕ*, to put or place]: in *Scotch law*, to restore to a situation formerly held. REPO'NING, imp. REPONED', pp. *-pōnd'*.

REPORT, v. *rē'pōrt'* [L. *reportārĕ*, to bring back; to report—from *re*, back or again; *porto*, I carry: It. *riportare*; F. *rapporter*, to relate]: to bear or bring back, as an answer; to give an account of; to relate; to circulate by popular rumor: to announce or make a statement of facts; to give an official statement; to follow the business of a reporter; in *mil.*, to announce or inform of one's presence; to state officially to a superior the breach or neglect of duty on the part of another: N. an account or statement circulated; that which is noised about respecting a thing; common fame; noise, as of a gun; an official statement of facts; a statement of proceedings, etc.; an account of a law case. REPORT'ING, imp.: N. the act of giving an account of anything orally or in writing: the art or profession of a reporter. REPORT'ED, pp. REPORT'ER, n. *-ĕr*, one who writes down in shorthand the proceedings of legislatures, of courts of law, and of public meetings, etc., with a view to publication. REPORT'ABLE, a. *-ă-bl*, fit to be reported. TO BE REPORTED or TO BE REPORTED OF, to be well or ill spoken of; to be mentioned with respect or reproach. TO REPORT ONE'S SELF, to present one's self before a superior, or at headquarters, for inspection or orders. CONFIDENTIAL REPORT, a private and secret statement of the results of an inspection or inquiry to a superior authority.—SYN. of 'report, v.': to narrate; recite; tell; relate; describe; detail;—of 'report, n.': narration; detail; relation; account; description; narrative; recital; hearsay; story; rumor; fame; renown; repute.

REPORTING, BRITISH PARLIAMENTARY, public reports of speeches, debates, and proceedings in the British legislature. The voluminous work *Parliamentary History of England*, is considered in England the most val-

uable historical work in the language. In the reign of Queen Anne, a monthly pamphlet, the *Political State*, gave an outline of the debates in parliament. In the reign of George I., the *Historical Register*, published annually, professed to give reports of parliamentary speeches. The *Gentleman's Magazine* began a monthly publication of the debates, the number for 1735, Aug., containing a report of the debate in the house of lords on the previous Jan. 3. Cave, the publisher, continued the practice in succeeding numbers; procuring for a friend or two with himself, admission into the gallery of the house of commons, or to some concealed station in the other house, where they privately took notes, which they compared and adjusted in a neighboring tavern. An abler hand, Guthrie the historian, was employed to reduce this crude matter to form; but no publication of it was made till after the session had ended. Cave, at length growing bolder, printed in full the names of speakers. Both houses took alarm, and passed resolutions forbidding reports of debates. The publication of the debates of either house had been repeatedly declared a high breach of privilege. In 1738 Speaker Onslow called the attention of the house of commons to the breach of its standing orders by Cave and others. The result was another resolution against the publication of debates 'either while parliament is sitting or during the recess,' and a threat to proceed against offenders with the 'utmost severity.' The reports, notwithstanding, still appeared, but under the disguise of 'Debates in the Senate of Lilliput,' in the *Gentleman's Magazine;* and 'Debates in the Political Club,' in the *London Magazine.* the celebrated Dr. Johnson was employed by Cave in the composition of his parliamentary debates, and the reports 1740-43 are held to have been entirely prepared by him; sometimes with the assistance of the abovementioned Guthrie, who had a good memory, and used to bring home as much as he could recollect from the house; and sometimes, according to Boswell, with no other aid than the names of the orators and the side on which they spoke. When it was observed to Johnson that he dealt out reason and eloquence equally to both parties, he remarked: 'I took care that the whig dogs should not have the best of it.' It was not till 30 years later that the parliamentary debates descended from the magazines to the newspapers. The latter had, however, for some time resolved to report the debates (Woodfall's *Junius*, iii. 345), and they took advantage of the popular excitement concerning the Luttrell-Wilkes election for Middlesex, to try the right of the house to interdict the publication of its proceedings.

The contest between parliament and the press began at the close of 1770. Some printers of London daily papers were ordered under arrest, 1771, Mar., for

printing the proceedings of the house of commons. Some surrendered, and asking pardon on their knees at the bar of the house, were discharged. One, Miller, not surrendering, was ordered into the custody of the sergeant-at-arms, whose messenger arrested Miller within the city of London, and was immediately given into custody by Miller for assault, and carried before the lord mayor, who declared the speaker's warrant illegal, discharged Miller, and committed the messenger for assault. Two other printers, Wheble and Thompson, had been carried respectively before Aldermen Wilkes and Oliver, who immediately discharged them, and bound them over to prosecute, and the speaker's messenger to answer, a charge of assault and false imprisonment. The house of commons was furious. It ordered the attendance of the lord mayor (a member of the house), and of Alderman Oliver. The aldermen of London attended the house, and pleaded their own cause, alleging that their charters exempted the citizens from any law process being served on them except by their own officers. The house committed the lord mayor and Alderman Oliver to the Tower. The city of London loudly protested, and the whole country responded to the appeal. The power of parliament to imprison ceases at the end of the current session, and on the day of prorogation, 1771, July 23, the lord mayor and Alderman Oliver marched out of the Tower in triumph; and at night the city was illuminated. A few days afterward, the speaker's messenger who had arrested Wheble was tried at Guildhall for the assault, found guilty, fined 1*s.*, and imprisoned for two months. Next session, the house of commons tacitly acknowledged itself beaten. The printers defied the house and continued to publish their proceedings. In a short time, the house of lords also conceded the point. The victory was complete, and no attempt has since been made to prevent publication of the debates and proceedings of parliament. The resolution affirming that it is a high indignity to, and 'notorious breach of, the privileges of the house to publish the debates,' still remains unrevoked on the Journals; yet galleries have been constructed for accommodation of reporters. It is still in the power of any member, who may call the speaker's attention to the fact that 'strangers are present,' to exclude the public and the reporters from the house; and this power has been exercised during living memory; but on such occasions one or more members who have dissented from this course have taken notes of the speeches, and have avowedly sent them to the newspapers.

The old machinery of newspaper reporting was exceedingly defective till 1815. At that time the public interest in domestic affairs made the publication of parliamentary debates an object of national importance; and in a few years parliamentary reporting assumed its present full, detailed, and accurate character. Increased facilities for the discharge of their important and arduous duties were from time to time given to the reporters. In the splendid

new Palace of Westminster, in which the two houses now hold their deliberations, exclusive galleries are provided for accommodation of reporters: in the house of lords, their gallery faces the throne and the woolsack; in the house of commons, it is behind the chair. The organization of parliamentary reporters for the *Times* newspaper and other great English journals is admirably complete; and arrangements of all kinds have been brought to a perfect system for securing expedition and accuracy. A long speech may be said to extend from the mouth of the speaker to Printing House Square. Relays of reporters make their notes, each in turn reading from them to an operator on a telephone wire in the office of the paper, who transmits the matter to the composing room where the first portions of the speech are frequently in type before the orator finishes his speech in Parliament.

A few years ago the object desired by newspaper proprietors was not a literal report, but what may be called the spirit of a speech—a faithful abridgment of the sentiment, matter, and style of the speaker. Parliamentary reports subsequently became more diffuse, the debates of a single evening not unfrequently occupying between 20 and 30 columns of small type. This, however, has not been maintained; and though much might be said against reporting at great length of important speeches, there can be nothing said in favor of such excessive condensation of all speeches as prevails in most of the London newspapers—the *Times* and the *Standard* being exceptions. The only publication since the *Mirror of Parliament* which professes to give all the speeches fully and accurately is *Hansard's Parliamentary Debates* (see HANSARD).

Publicity is now recognized as one of the most important instruments of parliamentary government. Long before a measure can be adopted by the legislature, it has been approved or condemned by the public voice; and, living and acting in public, parliament under a free representation has become as sensitive to public opinion as a barometer to atmospheric pressure. See May's *Constitutional History of England;* Knight Hunt's *Fourth Estate;* Andrews's *History of British Journalism;* Pendleton's *Newspaper Reporting in Olden Times and To-day* (1890); also article NEWSPAPER.—See WILKES, JOHN.

REPORTING, CONGRESSIONAL AND OTHER LEGISLATIVE: act of taking down for preservation or publication the speeches and proceedings in legislative bodies. In the United States it is done by two kinds of reporters, official and newspaper. The duties of an official reporter are wholly distinct from those of the clerk or sec. of the body who keeps the official record and

the movement of bills and resolutions. Formerly rapid long-hand writers were employed to report legislative speeches and debates; but they are now generally superseded by stenographers. All official reporters in the U. S. congress are stenographers. In the senate there are a chief and four assistants; in the house a chief and five assistants. In both branches nearly all the clerks of committees are stenographers. The same customs prevail in the principal state legislatures.—Each house of congress has a special gallery for the exclusive use of newspaper reporters, under the control of the senate committee on rules and of a standing committee of the newspaper correspondents on duty at Washington. These reporters do not pretend to take down speeches and debates *verbatim*, but rather apply themselves to running notes of a speech or debate and to composing word pictures of scenes in the halls below during important or exciting movements. Strict rules govern the issue of tickets for the privilege of the press galleries, and no reporter holding one can be personally interested in any legislation before congress or in any claim before its committees. More than two hundred reporters, representing newspapers in every part of the country, hold tickets to the press galleries.

REPOSE, v. *rĕ-pōz'* [F. *repos*, rest; *reposer*, to rest, to repose—from L. *repositus*, placed back again—from *re*, back or again; *pono*, I place: It. *riposare:* Sp. *reposar*]: to lay or be at rest; to rest mentally; to place or rest in, as confidence; to sleep; to recline; to rely, with *in* or *on:* N. state of sleep; rest; quiet; rest of mind; in *paint.*, certain parts in the composition of a picture which seem to tranquillize its aspect. REPO'SING, imp. REPOSED', pp. *-pōzd'*. REPO'SAL, n. *-zăl*, the act of reposing or resting. REPO'SEDLY, ad. *-zĕd-lĭ*. REPO'SEDNESS, n. *-zĕd-nĕs*, state of being at rest. REPO'SER, n. *-zẽr*, one who reposes. REPOS'IT, v. *-pŏz'ĭt*, to lay up; to lodge, as for safety or preservation. REPOS'ITING, imp. REPOS'ITED, pp. REPOSITION, n. *rē'pō-zĭsh'ŭn*, the act of replacing; the act of laying up in safety. REPOSITORY, n. *rĕ-pŏz'ĭ-tẽr'ĭ* [L. *repositōrĭum*, a cupboard]: a place where things are deposited for safety or preservation; a place where articles are kept for sale.—SYN. of 'repose, v.': to rest; recline; sleep; lodge; abide; settle; deposit; reposit; couch;—of 'repose, n.': rest; ease; quiet; quietness; peace; tranquillity; recumbency; reclination.

REPOSSESS, v. *rē'pŏz-zĕs'* [*re*, again, and *possess*]: to possess again. RE'POSSES'SION, n. the act of possessing again.

REPOUR, v. *rē-pōr'* [*re*, again, and *pour*]: to pour again.

REPOUSSÉ, n. *rĕ-pôs'ā* [F.—from *repousser*, to thrust back; *re*, again, and *pousser;* L. *pulsare*, to push]: ornamented metal-work formed in relief; and the method of producing it. The ornamentation resembles embossing; but the effect is produced by hammering up the metal, which is generally thin, from the back; and when a rude resemblance of the figure to be produced is thus formed, it is worked up by pressing and chasing the front surface. The finest specimens of this art are of the *cinquecento* or 16th century period, by Benvenuto Cellini. Cellini carried the art to France, where it has of late been much developed. Much common repoussé work is done in various countries in the soft white metals, such as pewter and Britannia metal; and as these are easily worked, and can afterward be electroplated, so as to hide the quality of the material, they are in considerable demand. After they are hammered up, they are filled with liquid pitch, and set by until it becomes solid. Then they are modelled and chased on the surface, the pitch forming a support, which prevents the tools from pressing down more than is required.

REPPLIER, Agnes: essayist; b. Philadelphia, 1857, Apr. 1. She is of French extraction. She is largely self-educated, not having learned to read until nine years of age, but having been an eager listener to the best reading. Her method still is to read and to write what interests her. She began writing at an early age, and showed a combined force of thought and charm of expression which soon secured place in the *Atlantic Monthly* and other leading periodicals. She visited England, 1894, and was received with welcome in literary circles. Her published works include *Books and Men* (1888); *Points of View* (1891); *Essays in Miniature* (1892); *Essays in Idleness* (1893); *In the Dozy Hours* (1894); *Varia* (Essays) (1897); *Phila., the Place and the People; The Fireside Sphinx* (1901); *Compromises* (1904); and *In Our Convent Days* (1905). Miss Repplier has also edited a *Volume of Famous Verse* in *Riverside Library for Young People.*

REPREHEND, v. *rĕp'rĕ-hĕnd'* [L. *reprehen'dĕrĕ*, to check, to censure; *reprehen'sus*, checked, restrained—from *re*, again; *prehendĕrĕ*, to lay hold of: It. *riprendere:* F. *reprendre*]: to administer reproof or censure to; to chide; to rebuke, to censure. Rep'rehend'ing, imp. Rep'rehend'ed, pp. Rep'rehend'er, n. *-ėr*, one who reprehends. Rep'rehen'sible, a. *-rĕ-hĕn'sĭ-bl* [F.—L.]: deserving reproof or censure; blamable; culpable. Rep'rehen'sibly, ad. *-blĭ*. Rep'rehen'sibleness, n. *-bl-nĕs*, the quality of being reprehensible; culpableness. Rep'rehen'sion, n. *-hĕn'shŭn* [F.—L.]: reproof; censure. Rep'rehen'sive, a. *-sĭv*, or Rep'rehen'sory, a. *-sėr-ĭ*, containing reproof or censure.—Syn. of 'reprehension': reproof; blame; censure; admonition; caution; reprimand; warning.

REPRESENT, v. *rĕp'rĕ-zĕnt'* [F. *représenter*—from L. *repræsentārĕ*, to represent—from *re*, again; *præsentārĕ*, to place before—from *præsens* or *præsentem*, present: It. *rappresentare*]: to show or exhibit by resemblance; to describe; to show by words and actions; to personate; to act the character of another, as in a play; to appear in an assembly for others; to act as a substitute for; to show by arguments or a statement of facts. REP'RESENT'ING imp. REP'RESENT'ED, pp. REP'RESENT'ER, n. *-ĕr*, one who represents. REP'RESENT'ABLE, a. *-ă-bl*, that may be represented. REP'RESENT'MENT, n. *-mĕnt*, image; an idea proposed as exhibiting the likeness of something. REP'RESENTA'TION, n. *-tā'shŭn* [F.—L.]: the act of describing or showing; a respectful declaration; that which exhibits by resemblance, as a picture or a statue; a plan; a map; a model: the act of representing others, as by deputation; a collective body of representatives (see REPRESENTATION, in Politics): performance, as of a play on the stage. REP'RESENT'ATIVE, n. *-ă-tĭv*, one who exhibits the likeness of another; an agent; a deputy; a substitute; one who represents another or others; in *nat. hist.*, that which represents the full character of the type of a group: ADJ. bearing the character or power of another; conducted by the agency of delegates chosen by the people. REP'RESENT'ATIVELY, ad. *-lĭ*. REP'RESENT'ATIVENESS, n. *-nĕs*, the state or quality of being representative.—SYN. of 'representation': resemblance; exhibition; likeness; description; show; delineation; portraiture; sight; spectacle.

REPRESENTA'TION, in Politics: function of the delegate of a constituency in a legislative or other public assembly. The principle of R., even where not directly recognized, must be presumed to have existed to some extent in all governments not purely democratic, so far as the sense of the whole nation was considered to be spoken by a part, and the decisions of a part to be binding on the whole. The constitution of ecclesiastical councils, in which an express or implied R. is necessarily involved, doubtless conduced to the application of a similar principle to national assemblies; but it is in the exigencies of feudalism that we trace the beginnings of an avowed and regulated system of political R. The feudal superior who had to levy aid from his vassals, summoned a limited number of them to attend him, and confer regarding the required aid. The earliest complete system of representative institutions is found in the parliament of the Sicilies under the Swabian kings; but Britain is the only country in which a representative feudal assembly ripened into a legislative. As early as the reign of Henry III., we find the knights of the shire elected by the 'men of the country,' probably the king's military tenants, to consider, in the stead of each and all of them, what aid would be granted to the king for a proposed expedition into Gascony. Representatives of the burgesses were soon afterward summoned, and were permanently ingrafted on parliament by Edward I. In Scotland, representative burgesses formed a part of the national assembly from the time of

Robert Bruce's famous parliament at Cambuskenneth 1326; but till a comparatively late period, all the barons or freeholders of the country formed part of the king's council and were entitled to attend in person. James I., on his return from England, attempted to introduce a system of R. among them, but it became practically inoperative; and it was not till 1587 that the representatives of the small barons came to form part of the parliament. The progress of society has led to great changes in the constitution of the British elective body, the most sweeping being those introduced by the Reform acts: see PARLIAMENT: REFORM, PARLIAMENTARY.

An important question naturally arises connected with the subject of R.: Is the delegate the mere mouthpiece of his constituents, who must give effect to all their opinions and interests, or is it his duty to exercise his trust in the first instance for the general welfare of the nation? The former idea of R. was doubtless the earlier one; but it cannot be easily vindicated on any proper theory of government; and it is now the generally recognized doctrine among English statesmen, that a member of the house of commons is bound to the entire nation by ties higher than those which bind him to his constituents; and that he ought to support such measures as he judges most beneficial to the country, even at the risk of prejudicing the immediate local interests of the body which sends him. It is therefore not very easy to reconcile with sound principles the usage which obtains so largely of demanding pledges from candidates for R. as to how they are to vote on every public question that is likely to come before them. Yet there is practically a difficulty in preventing a system of R. from becoming one of mere delegation, so long as the constitution gives to the electors the power of making their vote depend on any conditions which they may think fit to attach to it.

Most speculative politicians of the present day consider a representative government of some sort as the best ideal type of government; but all repudiate the idea of an inborn right in all citizens to participate, and still more to participate equally, in the right of choosing the governing body. Any very extensive suffrage tends to the predominance of mere numbers over intelligence, while a very limited suffrage has been objected to as precluding the benefits which the community at large are presumed to draw from participation in public functions. Several intelligent political writers, while advocating a widely extended suffrage, have proposed a graduation of that suffrage by giving to each individual a number of votes corresponding, as far as practicable, to his intelligence, property, or social position. This is set forth as the ideal of representative government; but the chief question is: By what test can the best approximate estimate of social value be arrived at? Two different schemes for this purpose have been proposed by John Stuart Mill and Prof. Lorimer respectively—the former founded mainly on intelligence as indicated by instruction, and the latter on wealth and social position. The

attention of political writers has lately been directed also to the question of the R. of minorities in local communities, which at present are not allowed to contribute an element in representative assemblies. The most feasible scheme for minority R. is perhaps that of Hare, which had the approval of Mill, by which those who do not like the local candidates, are to be allowed to fill up voting papers by a selection from the names of any persons on the list of candidates, with whose general political principles they sympathize. This system, with its other advantages, would, it is supposed, bring into legislative bodies numerous men of able and independent thought, who, by the present system, refrain from offering themselves, as having no chance of election by the majority of any existing constituency. See J. S. Mill, *Representative Government* (1861); Lorimer, *Political Progress not necessarily Democratic* (1857); Hare, *The Election of Representatives* (1860); Walpole, *The Electorate and the Legislature* (1882); Traill, *Central Government*.

In the United States provision has been made by law in several states for the R. of minority bodies. Thus the N. Y. statute prescribing the mode of electing members of the constitutional convention of 1867 provided for the election by the people of 32 members at large, but an elector was permitted to cast his vote for only 16: thus each of the 2 political parties could elect an equal number of the members. In Penn., the constitutional convention act of 1872 provided for a proportional R. of the 2 parties in the election of members of the convention: but in Penn. all the members—those at large and those for the 33 districts—were to be chosen according to this method, viz.: a voter might cast ballots for 14 of the 28 members at large; and for 2 out of 3, or 4 out of 6, of the members from his district. This scheme of 'limited voting' has often been put in practice in other states. A different mode of attaining the same end is the 'free' or 'cumulative' vote. This scheme enables even a small minority of the body politic to obtain R. By it every elector is entitled to a number of votes equal to the number of representatives to be chosen from his district: but he may give them all to one candidate. The method of cumulative voting was proposed for adoption in the Brit. parliament 1867, but was rejected: it has since been put in practice in Britain in the election of local representative bodies. It is embodied in the Ill. constitution of 1870: Art. IV. § 7 prescribes the method of cumulative voting for election of members of the state house of representatives. By the laws of many of the states the same method is required in election of directors and managers of incorporated companies. See BALLOT: SUFFRAGE: GOVERNMENT (and references under it).

In the United States the theory is that the senate represents the several *states* as equal individual political entities, while in the lower house the representatives of the *people* appear: thus in the senate all the states, large and small, have an equal representation—each state having 2 senators and no more. In the house of representatives, the people of each state have a R. proportioned in number to the

population, except that each state, however small, is entitled to R. by one member. The territories of the United States have no R. in the federal senate: to the house of representatives they are entitled to send each one 'delegate,' who, however, has no vote. In most of the state legislatures, R. in both of the houses is generally based on population, regard being had, however, to geographical subdivisions, as counties, townships, wards, etc. In some states (e.g., Conn.) the town is in part the basis.—See CONGRESS, U. S.

REPRESS, v. *rē-prĕs'* [L. *repressus*, checked, restrained —from *re*, back; *pressus*, pressed, squeezed, *premĕrĕ*, to press]: to put or keep down; to crush; to restrain; to subdue. REPRESS'ING, imp. REPRESSED', pp. *-prĕst'*. REPRESS'ER, n. *-ẽr*, one who represses. REPRESS'IBLE, a. *-i-bl*, that may be repressed. REPRESS'IBLY, ad. *-blĭ*. REPRES'SION, n. *-prĕsh'ŭn* [F.—L.]: the act of subduing; check; restraint. REPRESS'IVE, a. *-prĕs'iv*, tending or able to repress. REPRESS'IVELY, ad. *-lĭ*.—SYN. of 'repress': to subdue; overpower; crush; smother; suppress; curb; check; restrain; quell.

REPRIEVE, v. *rē-prēv'* [OF. *reprover*—from L. *reprobārĕ*, to disallow, to reject (see REPROBATE)]: to suspend or delay the execution of a criminal; to grant a respite to; to relieve from any suffering for a time: N. suspension or delay of punishment for a crime; applied chiefly in connection with capital crimes. The U. S. constitution gives the pres. power to grant reprieves. There are several grounds on which the judge or a court may grant R. One is, where the judge is not satisfied with the verdict, or is doubtful of the validity of the indictment; in which case he reprieves the sentence to give time for some appeal. Moreover, a ground of R. acted on as a matter of course, is when the prisoner is a woman pregnant in the sense of being 'quick with child,' and pleads that fact; in which case execution of the sentence is delayed until after her delivery. This was the law of ancient Rome; and nothing connected with the memory of Queen Mary in her persecution of the Protestants is more detestable than the burning in her reign of a pregnant woman in Guernsey, when the child, which was born at the stake, was cast into the fire as a young heretic. Another cause of R. is the insanity of the prisoner, whether the insanity supervened after the crime or not. REPRIEV'ING, imp. REPRIEVED', pp. *-prēvd'*.

REPRIMAND, v. *rĕp'rĭ-mănd'* [F. *réprimander*, to reprimand—from L. *reprimen'dus*, to be curbed or restrained —from *re*, back; *premo*, I press]: to administer a severe reproof or rebuke to for a fault, either in private or in public; to chide or reprove; to censure; to admonish. N. severe reproof or censure for a fault. REP'RIMAND'ING, imp. REP'RIMAND'ED, pp.—SYN. of 'reprimand, v.': to rebuke; censure; blame; reprove; reprehend; chide; reproach; upbraid; animadvert.

REPRINT, v. *rē-prĭnt'* [*re*, again, and *print*]: to print a second or new edition: N. *rē'prĭnt*, a second or new edition of a book. REPRINT'ING, imp. REPRINT'ED, pp.

REPRISAL, n. *rĕ-prī'zăl* [F. *représaille*, retaliation—from It. *ripresaglia:* L. *reprehen'sus*, held back, seized (see REPREHEND)]: retaking, from an enemy, goods which he has seized; or capture from him of other goods, as equivalent for the damage that he has wrought. LETTERS OF REPRISALS, same as Letters of Marque (q.v.).

REPRISE, n. *rĕ-prīz'* [F. *reprise*, a retaking: L. *reprehen'sus* or *reprehen'sus*, taken or held back (see REPREHEND)]: a ship retaken from an enemy or pirate; if recaptured within 24 hours of the hostile seizure, she must be wholly restored to her owners; if later, she is the lawful prize of her recaptors: in *arch.*, the return of moldings in an internal angle; in *OE.*, the act of taking something by way of retaliation: V. in *OE.*, to take again; to recompense. REPRI'SING, imp. REPRISED', pp. *-prīzd'*. REPRI'SES, n. plu. deductions and payments made annually out of lands, as rent.

REPROACH, v. *rĕ-prōch'* [F. *reprocher;* prov. F. *repropchar;* Sp. *reprochar*, to reproach, to blame—from a supposed mid. L. *repropĭārĕ*, to lay before one's eyes, to blame—from L. *prope*, near: also mid. L. *reprochārĕ*, to charge with crime]: to pass censure upon in contemptuous terms; to upbraid; to charge with a fault in severe language: N. censure mingled with contemptuous language; severe reproof; infamy; object of contempt or scorn; that which is the cause of shame. REPROACH'ING, imp. REPROACHED', pp. *-prōcht'*. REPROACH'ER, n. *-ẽr*, one who reproaches. REPROACH'ABLE, a. *-ă-bl*, capable of being reproached. REPROACH'ABLY, ad. *-blĭ*. REPROACH'ABLENESS, n. *-bl-nĕs*, the state of being reproachable. REPROACH'FUL, a. *-fûl*, containing or expressing reproach; bringing or casting reproach; upbraiding; scurrilous; base. REPROACH'FULLY, ad. *-lĭ*, in a reproachful manner; scurrilously; ignominiously. REPROACH'FULNESS, n. *-nĕs*, the quality of being reproachful. REPROACH'LESS, a. *-lĕs*, without reproach.—SYN. of 'reproach, v.': to rebuke; censure; blame; upbraid; revile; vilify; condemn;—of 'reproach, n.': discredit; scandal; dishonor; contempt; insult; scorn; disgrace; infamy; shame; disrepute; opprobrium; invective; abuse; reviling; scurrility; insolence; contumely; sarcasm.

REPROBATE, a. *rĕp'rō-bāt* [L. *reprobātus*, censured, reproved; *reprobārĕ*, to disapprove—from *re*, again; *probārĕ*, to test]: wholly given up to sin; lost to virtue or grace; depraved; abandoned; rejected: V. to disapprove with marks of extreme dislike; to give up to destruction without hope of pardon: N. a person given up to wickedness; one lost to virtue and religion. REP'ROBATING, imp. REP'ROBATED, pp.: ADJ. rejected; abandoned. REP'ROBATENESS, n. *-nĕs*, the state of being reprobate. REP'ROBA'TION, n. *-bā'shŭn* [F.—L.]: the act of disallowing with abhorrence; in *theol.*, state of being consigned or abandoned to destruction without hope of pardon—the opposite of *election*. REP'ROBA'TIONER, n. *-ẽr*, one who holds that part of the human race were created for reprobation.—SYN. of 'reprobate, a.': abandoned; profligate; vile; base; vitiated; depraved; castaway; corrupt; wicked.

REPRODUCE, v. *rē′prō-dūs′* [*re*, again, and *produce*: F. *reproduire*: Sp. *reproducir*]: to form anew in whole or in part what has been cut off or lost; to generate, as offspring. RE′PRODU′CING, imp. RE′PRODUCED′, pp. *-dūst′*. RE′PRODU′CER, n. *-sėr*, one who or that which reproduces. RE′PRODUC′TIVE, a. *-dŭk′tĭv*, pert. to or used in reproduction; generative. RE′PRODUC′TION, n. *-shŭn* [F.—L.]: the act or process of renewing that which has been lost or destroyed; generation; that which is reproduced.

REPRODUC′TION IN ANIMALS propagation of organized beings in the animal kingdom. R. is by three different processes. The first of the three modes of multiplication of individuals is the division of one organism into two; each of these, again, dividing into two others, and so on: this is termed *R. by fission*. The second mode of R. is the formation of a bud at some part of the body of the animal: this bud gradually approximates in form to that of the parent from which it springs; its pedicle or stem gradually disappears; and the liberated bud ultimately assumes a perfect form, resembling in all respects the parent from which it sprang: *R. by gemmation*. The third mode is far the most complicated: in it the new organism results from a series of change soccurring in an impregnated egg or *ovum*. For this process, distinct sexual organs, both male and female, are required; which, however, may be associated in the same individual, though in all the higher animals they occur in distinct individuals—a female organ for the production of cells termed 'germs,' and a male organ for the production of certain cell stermed 'spermatozoa.' It is from the union (either within or without the body) and the mutual action of these cells—the germ and the spermatozoon—that the

Fig. 1.—Longitudinal Fission of Vorticella.

impregnated ovum results. The new resulting body is altogether different from either of the cells which took part in its production. This is the ordinary form of R. in all the higher animals, and may be termed *true generation*, in contradistinction to the previous forms of *reproduction by multiplication*. The terms *Digenesis* and *Heterogenesis* have been applied by recent physiological writers to designate the form of R. in which the contact of germs and spermatozoa gives rise to fecundation; while the germs *Monogenesis* and *Homogenesis* have been similarly applied to the cases in which non-sexual R. takes place by fission or gemmation.

Fissiparous multiplication is illustrated by reference to the Infusoria. It may be either longitudinal, as usual in *Vorticella*: or transverse, as in *Stentor;* or indifferently

longitudinal or transverse, as in *Chilodon*, *Paramecium*, etc. The joints of tape-worms multiply in this manner, and when sufficiently developed become free. Among some of the Annelids or true worms, also, R. of this kind in somewhat modified form is observed. This was noticed first in a *Nais* by the Danish naturalist Müller, by whom it was regarded as rare and accidental. Researches of De Quatrefages and Milne-Edwards have shown that the process is far more significant than Müller supposed. In the genus *Syllis*, De Quatrefages noticed the following appearances: When one of these worms is about to reproduce itself by fission, a number of rings become developed at its posterior extremity, and there is a notch or groove beween the first of these rings and the part in front of it. The first ring soon becomes organized into a head provided with eyes and antennæ. The two annelids, parent and offspring, continue, however, to be united by the skin and intestine in such a manner that the latter animal lives solely on

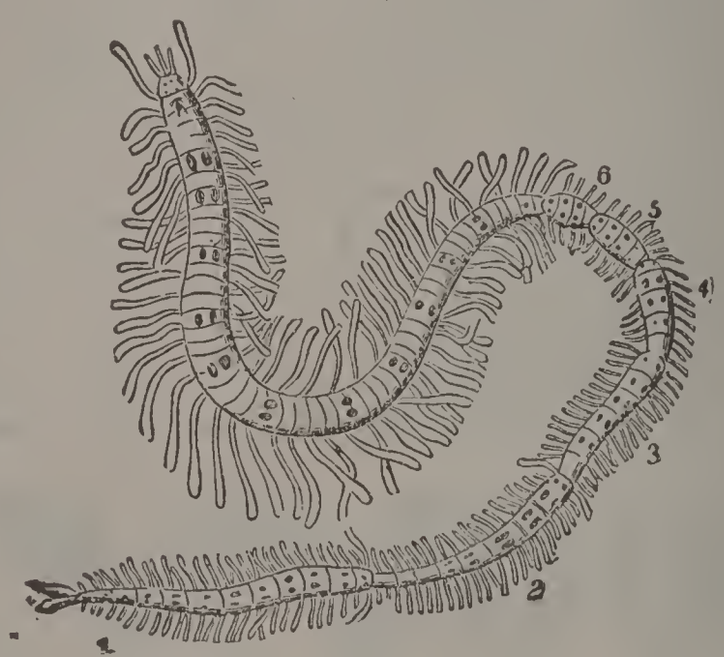


Fig. 2.—*Myriana*, with six new individuals formed on it.

the food swallowed by the former. During this period, each possesses independent life, for a struggle may often be observed between the two, each wishing to go its own way. After a certain time, the body of the offspring becomes distended with ova in some cases, and with spermatozoa in others, while neither of these structures is seen in the body of the primary animal. Complete division is at length effected, and the offspring is free. In a few days, however, their bodies burst, from the distention caused by their contents. Ova and spermatozoa are thus diffused through the water, and fecundation thus takes place. In the genus *Myrianida* (*Autolytus*, according to Grube's classification), Milne-Edwards has seen no less than six new individuals (instead of a single one, as in *Syllis*) formed in gradual succession, one before the other, between the two terminal seg-

ments of the original body. Each of these new individuals, as it arrived at maturity, and acquired the external form (in reduced dimensions) of the parents, was found to be possessed of reproductive organs, of which the original animal was totally devoid. The youngest and smallest individual is the most remote from the tail.

In these instances, multiplication by division occurs as a *natural* process, but there are many cases in which *artificial* division gives rise to multiplication. Bonnet having found that a certain kind of small worm, when cut in two, reproduced a tail at the cut extremity of the cephalic half, and formed a head upon the caudal half, increased the number of sections, and finally succeeded in dividing one worm into 26 parts, almost all of which acquired a head and tail, and thus became distinct individuals. Corresponding results may be obtained by dividing a planaria or actinia into many segments.

Reproduction by gemmation is a phenomenon very frequent in the lower departments of the animal kingdom. In the lowest of the animal sub-kingdoms, the PROTOZOA it occurs in the *Rhizopoda*—viz., in the *Foraminifera* in the *Spongiæ*, being probably the most common form of R. in sponges; and in the *Infusoria*, e.g., in *Vorticella*. In the CŒLENTERATA, it is of almost general occurrence in the classes *Hydrozoa* and *Actinozoa*; and in the MOLLUSCOIDS it occurs in *Polyzoa* and in *Tunicata*. In the accompanying figure (fig. 3), the process is shown as it occurs in the *Hydra fusca*, a fresh-water hydra (type of the *Hydrozoa*). If some hydras are kept for a few days in a glass of their native water, knot-like excrescences will be seen on their bodies. These are the buds or *gemmæ*, which rapidly enlarge, and each by degrees assumes the appearance of a young hydra, tentacles appearing about the mouth, just as in the original animal. For some time, a portion of the food (minute infusoria, entomostraca, etc.), caught and digested by the parent, passes into the body of the offspring; but when the tentacles are sufficiently developed, the young polyp catches food for itself; and when it is sufficiently matured to commence an independent existence, the connecting pedicle gives way, and the young animal is free and independent, its posterior aperture of communication soon closing.

Fig. 3.—*Hydra fusca*, with a young bud at *b*, and more advanced bud at *c*.

It must be distinctly understood that the fact of an organism reproducing itself by fission or gemmation does not by any means exclude the possibility that it may be reproduced also by fecundated ova. That this is the case is indeed shown in the instance of the

worm *Myriana*. The Hydra, too, increases by ova, and it may be cut in pieces, each of which becomes a perfect animal. Other corroborative cases might be given.

In *true generation*, two special organs are required—a female organ for producing the germ-cell or ovum, and a male organ for producing the sperm-cell or spermatozoon; and each form of generative apparatus consists of two parts, of which one is a formative organ—in the female termed an *ovarium*, or ovary and in the male a *testis*—in which the reproductive cells are formed, and which is essential; and an efferent duct, by which the products of secretion are carried off. The male and female organs may exist in separate individuals, or they may co-exist in the same individual, giving rise to the condition known as *Hermaphroditism* (q.v.). The former condition is termed *bisexual* or *diœcious*, and the latter *unisexual* or *monœcious*. For a general description of the changes which take place in the impregnated egg, see DEVELOPMENT OF THE EMBRYO.

The following briefly outlines the mode or modes of R. in the different classes of animals, beginning with the lowest.

In the sub-kingdom PROTOZOA, R. is usually by fission, occasionally by gemmation; but no satisfactory instances of true sexual propagation by means of ova and spermatozoa are known, those cases described in certain Infusoria not having been confirmed by subsequent observers. It is worthy of notice that in the Infusoria, propagation is effected in no less than three different ways—viz., by the two processes already described, and by a process known as 'encystation. See INFUSORIA.

In the sub-kingdom CŒLENTERATA, it is found that both the Hydrozoa and the Anthozoa multiply by gemmation, by a true reproductive process, and in a few genera by fission.

In the ECHINODERMATA fission has been observed in one class, the Holothuroidea, which, moreover, have distinct sexual organs combined in the same individual. In the other classes—the Echinoidea, Asteroidea, and Crinoidea—the sexes are separate, and generation takes place only by the union of germs, or ova and spermatozoa. In the ANNELIDA, true generation takes place, though, as above shown, multiplication is sometimes by fission. In the lower *Mollusca* or *Molluscoids*, multiplication is by gemmation and by true generation; while in the higher *Mollusca*, multiplication takes place only by true generation.

In the ARTICULATA—Insects, Crustaceans, etc.—distinct generative organs are always present; and, except in one class of Crustaceans—the Cirrhopoda—the sexes are distinct.

In the VERTEBRATA is found the highest and most complex development of the generative function. In them, with a doubtful exception in the case of one or two genera of fishes, the sexes are always distinct.

The *osseous* and *cartilaginous* fishes present important

differences in their reproductive organs and modes of R. In the osseous fishes, the essential female organ—the ovary, or roe—consists of a large membranous bag, usually in two lobes, sometimes single. When distended with ova, this organ fills the greater part of the abdominal cavity, and its lining membrane is arranged in folds, wherein the ova are formed and retained until ripe for expulsion. They then escape into the ovarian cavity, and are expelled in almost incredible numbers through a special opening immediately behind the anus and in front of the urinary canal. As a general rule, the ova of fishes are impregnated after their expulsion; and in order that the impregnation of a sufficient number of eggs may be secured, the male secretion of fishes—the fluid containing the spermatozoa—is very abundant; the male secreting gland, which in fishes is termed 'the milt' or 'soft roe,' being equal in bulk to the ovary of the female. In a few instances, however, the young are hatched in the ovary, and grow to a considerable size before they are born, and in these cases—e.g., in the viviparous blenny—impregnation must take place internally. In the cartilaginous fishes—as the sharks and rays—the generative organs are of higher type. The eggs are here always impregnated within the body of the female, the male having special organs by which true sexual congress is effected, and the ovaries form two large racemous bunches on either side of the spine. The eggs are large in size, and comparatively small in number; and as each egg escapes from the ovary, it is seized by a true oviduct, which furnishes it with additional protective coverings. About the middle of this tube 'there is a thick glandular mass, destined to secrete a horny shell, in which the yolk and white of the egg become incased. The egg, when completed, has somewhat the shape of a pillow-case, with the four corners lengthened out into long tendril-like cords, whereby the egg is entangled among the sea-weed at the bottom of the ocean. A brittle egg-shell would soon be destroyed by the beating of the waves; hence the necessity for the corneous nature of the envelope; and yet how is the feeble embryo to escape from such a tough and leather-like cradle? This likewise has been provided for. The egg remains permanently open at one extremity; the slightest pressure from within, therefore, separates the valvular lips of the opening, and no sooner has the little shark thus extricated itself from its confine-

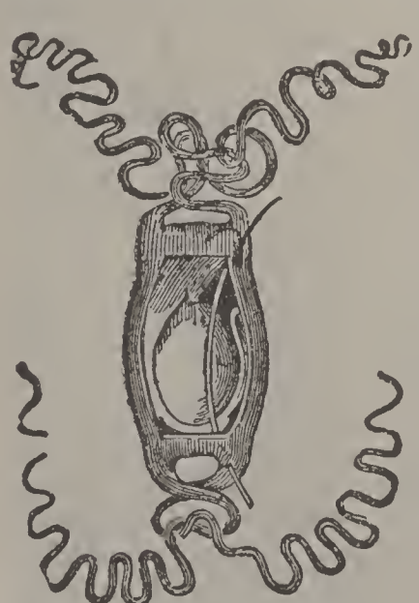


Fig. 4.—The Egg of Cartilaginous Fish, opened so as to show the young animal.

ment, than the two sides close so accurately, that the fissure is imperceptible.'

In the *Amphibia* or *Batrachia*, the sexes are more closely associated than in the osseous fishes, the ova being generally impregnated as they escape from the oviduct. The mode of R. of some amphibians is remarkable and anomalous. See PIPA.

In the true *Reptiles*, the male sexual organs become more perfect, adaptations being supplied to facilitate the impregnation of the female.

In *Birds*, the generative organs present close analogy to those of the higher reptiles. There is only a single ovary (the left) that has a bunch-like or racemous appearance; the right, with its oviduct, being always atrophied or rudimentary—a remarkable violation of symmetry, resembling that which occurs in the lungs of serpents. As prolonged utero-gestation would be incompatible with flight, incubation here attains its fullest development.

In *Mammals*, a new organ for the first time appears, from which that important class derives its name. In most of them (see MAMMALIA: PLACENTA), a temporary organ also, the Placenta, is formed, by which the fetus is nourished during uterine existence.

Huxley's *Comp. Anat. of Invertebrated Animals*, p. 27; and Balfour's *Comparative Embryology*.

REPRODUC'TION IN PLANTS: propagation of organisms in the vegetable kingdom. See PLANT: VEGETABLE PHYSIOLOGY: FECUNDATION. Reproduction, so far as known, is by fission and more rarely internal self-division in the Protophytes, much as in Protozoa: budding in these low organisms is a modification of fission. Above these come the Zygospores [Gr. *zugos*, yoke], in which two sexual cells, mostly without observable difference, unite to produce a thick-walled 'resting spore' (zygospore), which continues through drought or winter. Of this division is the class named from its zoospores, or locomotive sexual cells, including the curious 'water-net,' common in ponds; the *Conjugatæ*, in which there is distinct conjugation of the entire mature plant, as in desmids and diatoms, or a commingling of the contents of conjugated cells on two filaments, as in *Spirogyra* (the pond-threads with spiral chlorophyl, order *Zymenacæ* and the Mucor type of molds, which also produce asexually in terminal cells (*conidia*). The Oospores, next, develop a large cell, *oogonium*, containing *oosphores*, which are fertilized by either the protoplasm or motil spermatozoids issuing from another special smaller cell, *antheridium*, and produce a resting oospore: the classes differ greatly in size and structure, including the small gobular colony Volvox; the filamentous *Œdogonieæ*, forming green fringes on sticks in water and developing intercalary sexual cells; the similar but tubular Cœloblasts, like Vaucheria, with outgrowing sexual cells; the similar but colorless parasitic *Saprolegniaceæ;* the Peronospore molds or mildews, germinating in the cells of higher

plants, such as grape and potato vines; and the Fucaceous sea-weeds, sometimes gigantic. The Carpospores form various antherids, and a sporocarp, containing one or more spores, and with a more or less complex envelope (fruit-like, hence the name, from Gr. *karpos*, fruit), and include the class *Coleochæte*, small fresh-water masses of radiating filaments; the class *Florideæ*, red and violet sea-weeds, the spermatozoids of which float about until they come in contact with *carpogonia*; the class *Ascomycetes* [Gr. *askos*, sac], including various molds, the edible morel, black-knot, lichens, rusts and smuts; the *Basidiomycetes*, fungi; and the *Characeæ*, stoneworts, certain aquatic plants with stem and leaves—a high advance in form, with the same essential style of reproduction as rust and smut. Next above are the Bryophytes, comprising liverworts and mosses, with alternations of sexual and asexual generations, for the details of which see HEPATICÆ: MOSSES. Following these are the Pteridophytes, with similar alternations, but with much higher development of tissues: see EQUISETACEÆ: FERNS. In the highest branch, *Phanerogamia* (see PHANEROGAMIC,) flowering plants, the pollen-grain produced by the stamen, meeting the stigma of the pistil, sends down a tubular prolongation of itself to the embryonic vesicle, and a seed results, which differs from a spore in the development within it of an embryo plant. For details, see VEGETABLE PHYSIOLOGY.

Many flowering plants are fertilized by their own pollen; in most cases the wind is the agent, and the plants and flowers are not lacking in beauty (see Justice Edward Fry, *Contemporary Review*, 1879–80, on *Utility to Flowers*, etc.). In plants that have two kinds of flowers, one kind showy, the other hidden (*Cleistogenous*, q.v.), the latter are most prolific. Still, many plants are dependent on insects for cross-fertilization, which has been proved by experiment with some plants to be highly advantageous in producing vigorous offspring; and, in not a few instances, the position of stamen and pistil, or the former not coming to maturity, or else not at the same time with the latter, renders the plant dependent on insects for any fertilization at all. Sprengel, in the end of the 18th c., observed some of these facts, and they were studied by Charles Darwin (q.v.), and set forth in several of his works. While he found no adaptation to insects in some orchids, for example, in others he traced the most elaborate contrivances for this agency. Thus in one species, *Catasetum saccatum*, when an insect lights on the lip of the male flower, and touches an irritable horn of the hood, the irritability is at once conveyed to the hidden curved stamen, which springs out, and its pollen strikes the head of the insect. In many common plants of Europe and America, arrangements as certain if not as curious are found for the same purpose. As to beauty, Darwin claimed only that flowers have become 'beautiful, or rather conspicuous. in con-

trast with the greenness of the leaves,' to attract insects. This is not the same teaching as that of others, e.g., Lubbock, that the shape, colors, honey, and scent of flowers, all are due to the selection exercised by insects. This was well answered by the late Dr. Asa Gray, himself an evolutionist, in the *Contemporary Review* (1882); see summary in H. W. Parker's *Spirit of Beauty*, pp. 63–64. Dr. Gray made a distinction between insect-produced and insect-educed beauty. Darwin, with his characteristic candor, speaks of insects finding their way to minute nectar-glands on leaves, to small and dingy flowers, and as indifferently visiting the variously colored flowers of the same species, or after the petals had fallen; and he observed bees paying no attention to flowers during the intervals when the sun was not shining, so as to bring out the odor. The heavenly combinations, harmonies, and delicate perfections of beauty in many flowers have no explanation in the senses and supra-œsophageal ganglia of insects. Besides, there is abundant beauty in leaf, stem, fungus, moss, sea-weed, and microscopic features, with which insects have nothing to do.

REPROMULGATE, v. *rē′prō-mŭl′gāt* [*re*, and *promulgate*]: to promulgate again.

REPROOF: see under REPROVE.

REPROVE, v. *rĕ-prôv′* [F. *réprouver*, to reject, to disallow—from L. *reprobārĕ*, to condemn (see REPROBATE)]: to reprimand; to chide; to blame or censure; to rebuke. REPROV′ING, imp. REPROVED′, pp. *-prôvd′*. REPROV′ER, n. *-ẻr*, one who reproves. REPROV′ABLE, a. *-prôv′ă-bl*, deserving censure; blamable. REPROV′ABLY, ad. *-blĭ*. REPROV′INGLY, ad. *-lĭ*. REPROOF′, n. *-prôf′*, blame expressed to the face; censure; in *OE.*, slander.—SYN. of 'reprove': to blame; censure; check; chide; reprehend; refute; rebuke; scold; reprimand;—of 'reproof': rebuke; censure; blame; admonition; reprehension; chiding.

REPRUNE, v. *rē-prôn′* [*re*, again, and *prune*]: to prune a second time.

REPTANT, a. *rĕp′tănt* [L. *reptans* or *reptan′tem*, creeping, crawling; *reptārĕ*, to creep (see REPTILE)]: in *bot.*, creeping. REPTATION, n. *rĕp-tā′shŭn*, in *zool.*, the act of creeping or crawling.

REPTILE, n. *rĕp'tĭl* [F. *reptile ;* It. *rettile ;* Sp. *reptil,* a reptile—from L. *reptĭlis,* creeping—from *reptāre,* to creep along, to crawl; *repo, serpo,* I creep: Gr. *herpō,* I creep]: an animal that creeps on its belly, or moves along by means of short legs, as snakes, lizards, etc.; a grovelling mean creature: ADJ. moving on the belly, or by means of small feet or legs. REPTILIA, n. plu. *rĕp-tĭl'ĭ-ă,* the systematic name for the cold-blooded vertebrate animals that never possess gills—including tortoises, snakes, lizards, and crocodiles. REPTIL'IAN, a. *-ĭ-ăn,* belonging to the reptiles or reptilia: N. one of the reptilia.—*Reptiles* are a class of Vertebrates distinguished from Amphibians (q.v.) by never possessing gills, but by breathing by lungs throughout life, by the usual presence of an exoskeleton, by possession of only one occipital condyle, and by numerous other characters—chiefly osteological. They agree in structure much more closely with birds, which Huxley has shown to present only a modification of the reptilian type, and with which he has accordingly united them into the group *Sauropsida.* They are distinguished from birds chiefly by the exoskeleton taking the form of scales or scutes, but never of feathers, by the forelimb possessing more than three digits, by the slight development of the pelvis, the separateness of the metatarsal bones, and the cold blood. They are divided into nine orders, of which the first four only exist at the present day, and the remaining five are extinct: 1. *Lacertilia* (lizards, chameleons, blind-worms, etc.); 2. *Crocodilia* (alligators, crocodiles, gavials); 3. *Ophidia* (snakes); 4. *Chelonia* (tortoises and turtles); 5. *Ichthyosauria* ('fish-dragons'); 6. *Plesiosauria* (the so-called 'swan-dragons'); 7. *Dicynodontia* (with walrus-like teeth); 8. *Pterosauria,* or pterodactyls (the so-called 'flying dragons'); and 9. *Ornithoscelida,* or bird-like reptiles (iguanodon, etc.), which were almost perfectly intermediate between the ordinary reptiles and the birds.

Except the tortoises, the reptiles in general are of elongated form, the body being often nearly cylindrical, and usually terminating in a very long tail. In a considerable number (as the serpents and some of the lizards), no traces of limbs are apparent; in some (as certain lizards), the limbs are rudimentary; while in the remainder the limbs are fully developed, though not to the extent to which development takes place in birds or quadrupeds, as the feet rarely suffice to keep the belly from the ground. The outer covering of the body presents several well-marked varieties. In a few of the lizards, the skin is covered with regular scales, composed of a mixture of bony and horny matter, and lying over each other like those of fishes; in most lizards and in serpents, there are scales and plates developed on the surface of the corium or true skin, and covered over with epidermis, which is thrown off at intervals, the moult forming an accurate cast of the body of the animal; while in the crocodiles and tortoises the scales are con-

verted into true bony plates, which in the former are embedded in the tissue of the skin, and in the latter are united with the ribs, sternum, etc., of the internal skeleton, to form the complete bony case into which the head and limbs of the animal can be retracted.

The skeleton is completely ossified in all reptiles, and presents to the philosophical anatomist many points of interest, for which space here is lacking. In the skeleton of the crocodiles and lizards, there is an obvious distinction of the regions of the neck, trunk, and tail. The total number of vertebræ is often great, but it is

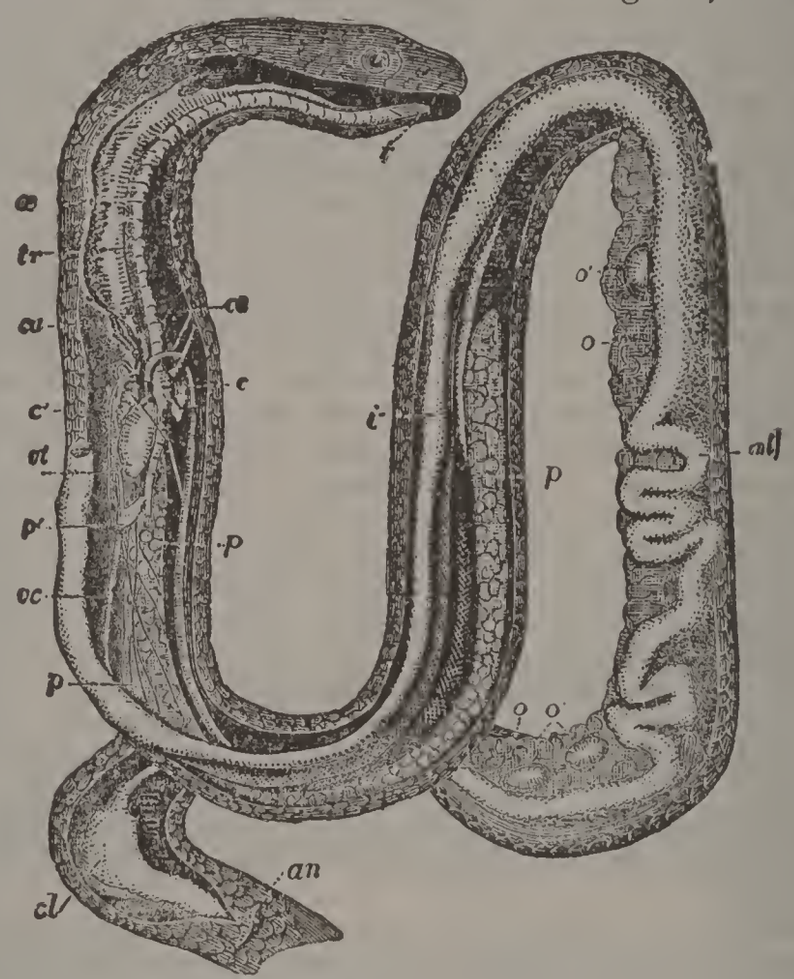


Fig. 1.—Anatomy of a Serpent.

t, tongue and glottis; *œ*, œsophagus (partly removed to show heart, etc.); *tr*, trachea; *ca*, *ca*, carotid arteries; *c*, left auricle; *c'*, right auricle; *vt*, ventricle of heart; *vc*, vena cava inferior; *p*, *p*, principal lung; *p'*, rudimentary lung; *i*, stomach; *int*, intestines; *cl*, cloaca; *an*, anus; *o*, ovary; *o'*, *o'*, ova.

chiefly in the caudal region that the excess occurs; there being 36 caudal vertebræ in the crocodile, and 115 in the monster lizard. In the serpents, the vertebral column is more abundantly sub-divided than in any other animal; the number of vertebræ in the python being 422, of which about six-sevenths possess ribs articulated to their bodies by a ball-and-socket joint. By the motion thus allowed to the ribs, they become in some degree instruments of progression. In the reptiles generally (excepting the tortoises), one surface of each centrum (or body) of the vertebræ is concave, and the

other convex; while in the tortoises these surfaces are flat. The true skull is small, the bulk of the head being made up by the jawbones. As the sutures separating the individual bones never become obliterated, the reptilian skull is well adapted to illustrate the true structure of the vertebral skeleton. In fig. 3 is the skull of the crocodile; in fig. 4, that of a serpent; and in both, the corresponding bones are indicated by the same

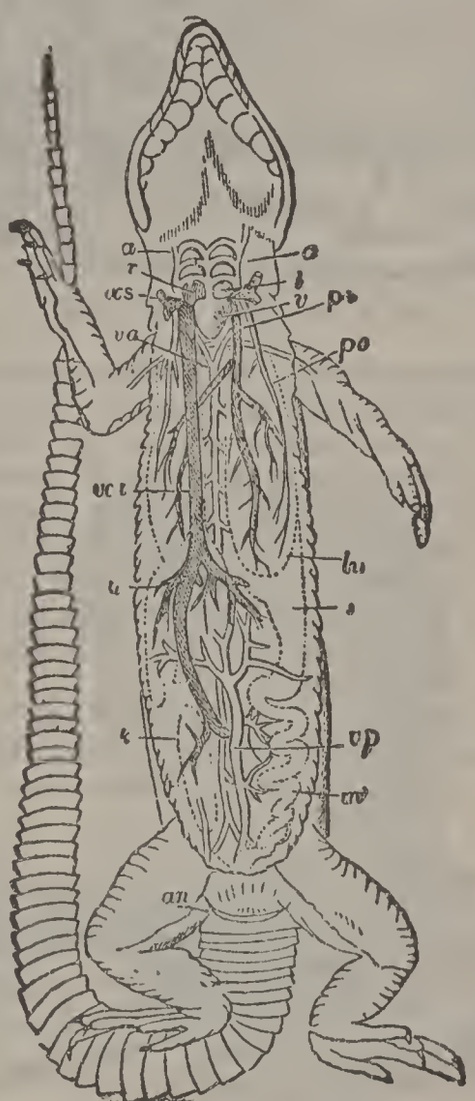


Fig. 2.—Anatomy of Lizard:

a, *a'*, arches of the aorta; *r*, right auricle; *l*, left auricle; *v*, ventricle; *vcs*, vena cava superior; *vci*, vena cava inferior: *va*, ventral aorta; *pv*, pulmonary veins; *pa*, pulmonary arteries: *lu*, lung; *li*, liver and hepatic vein; *k*, kidneys and renal vessels; *vp*, vena portæ; *s*, stomach; *int*, intestines; *an*, anus.

references. 1 is the *principal frontal*, divided in the serpent into two parts; 2, 2 are the *anterior*, and 4, 4 the *posterior frontals;* 7 is the *parietal bone*, usually single in reptiles; 12, 12 are the *mastoid bones* (homologous to the mastoid process in man); 17, 17 are the *intermaxillaries;* 18, 18 are the *maxillaries;* 20, 20 are the *nasals;* 23 is the *temporal bone* (corresponding to the squamous portion of the human bone); 34, 35, 36, 37 are the *dental*, the *articular*, the *angular*, and the *opercular* portions of

the *inferior maxilla*, or lower jaw; *a* is the *tympanic bone*, which supports the drum of the ear; *b* is the *zygomatic* or *malar* bone; and *c*, *c* the *lachrymals*. The lower jaw (except in the tortoises) presents the peculiarity of being composed of a number of separate pieces; there being four or five in each half-jaw in serpents, while in croco-

Fig. 3.—Skull of Crocodile.

diles and lizards each half is divided into *at least five*, and generally six pieces, which are united by suture. The four most important of these are shown in fig. 3. The purpose of this arrangement is probably (as Dr. Buckland suggested in his *Bridgewater Treatise*) to diminish the risk of fracture, which would otherwise attend the snapping together of their elongated jaws.

The bones of the extremities, except in the serpents, which have no limbs, correspond with those occurring in the higher Vertebrata.

The mouth, except in the Chelonians, is usually provided with conical teeth, adapted rather for seizing and holding prey, than for dividing and masticating food

Fig. 4.—Skull of Serpent.

These teeth, like those of fishes, are successional; that is to say, new teeth are being constantly developed, while the older ones are regularly shed. In the crocodiles, three or even four generations of teeth, sheathed one within the other, may often be seen in the same socket. In some instances, the teeth are attached solely to the jaws, while in others they are attached also to the pterygoid or palate bones. In Chelonians, the teeth are replaced by a horny beak, which, according to the habits of the animal, is adapted for bruising as well as

cutting, and which in some species constitutes a somewhat formidable weapon.

The digestive organs present less marked differences than the osseous system. With the exception of certain Chelonians, all reptiles are carnivorous, and swallow their prey whole. Hence the jaws are adapted, by their mobility and sub-division into segments, to open very widely, and the œsophagus is capable of great dilatation. The tongue is commonly free, elongated, and bifid, except in the crocodiles, in which it is immovable; whence the popular idea that these animals do not possess this organ. The stomach is sometimes scarcely larger than the œsophagus and intestines (as in serpents), while in other cases it forms a sac of considerable size. In either case, it is capable of great dilatation. A liver, pancreas, and spleen are always present, the two former glands pouring their secretions into the upper part of the intestine, which is short, wide, and not much twisted, and divided into two portions, corresponding to the small and large intestines of mam-

Fig. 5.—Section of the Lung of the Turtle (reduced).

mals, by a valve. It terminates in a wide cloaca, into which the ducts of the urinary and generative organs usually open. The anal aperture of this cloaca is *transverse* in serpents and lizards, and *longitudinal* in crocodiles and tortoises. These peculiarities in the anal aperture are accompanied by remarkable differences in the external generative organs of the male, and seem to divide the class into two great sections.

It is in their circulating and respiratory organs that reptiles present the most marked characteristics. Like birds and mammals, they breathe air; but like fishes, they are cold-blooded. The reason why they are unable to sustain a fixed temperature above and independent

of that of the surrounding medium is due partly to the arrangement of the blood-vessels (see CIRCULATION), and partly to the structure of the lungs. The lungs are usually of large size; but as they are not sub-divided, as in mammals and birds, into innumerable microscopic air-cells, the real aërating surface is comparatively small. In several orders, they are merely capacious bags, whose vascular or aërating surface is but slightly increased by sacculi developed in their cells. In serpents, the pulmonary arrangement is singular, one lung (usually the right one) being of extraordinary length, while the other remains altogether rudimentary. It is in the tortoises and crocodiles that the lung is most highly developed; but if the reader will compare the accompanying figure of the lung of the turtle with a section of any mammalian lung, he will at once perceive the striking difference. This inferiority of the respiratory apparatus of reptiles is further shown in the absence of those means for continuous introduction and expulsion of air which are observed in birds, and still more in mammals (see RESPIRATION).

The cerebral portion of the *nervous* system in many respects resembles that of fishes, but the cerebral hemispheres are larger in proportion to the optic lobes, while the cerebellum is usually smaller.

The organs of the senses are better developed than in fishes. The eye is always present in reptiles, and presents no remarkable peculiarity. We here first meet with a special arrangement for protection of this delicate organ; 'for while in serpents the skin of the head passes continuously in front of the eyes, merely becoming transparent where it covers the cornea, it is doubled in most other reptiles into two folds, constituting the upper and lower eyelids, which can be drawn together by a sphincter muscle; and we also find a rudiment of a third eyelid, formed by an additional fold of membrane at the inner angle, which is so completely developed in crocodiles as to form a nictitating membrane, that can be drawn completely across the eye, as in birds, by a muscle specially adapted for that purpose.'—Carpenter's *General and Comparative Physiology*, 3d ed. p. 495.

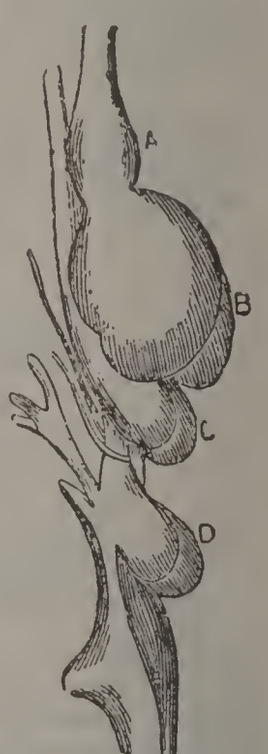


Fig. 6.—Brain of Turtle:
A, olfactive ganglia; B, cerebral hemispheres; C, optic ganglia; D, cerebellum.

The organ of hearing is more highly developed than in fishes or amphibia. There is no external auditory canal, the membrane of the tympanum being covered externally by the integument of the head. The senses of taste and touch are probably obtuse in most animals of this class, and from its structure the tongue is conjectured to be rather an organ of touch than of true taste.

REPTILE.

All reptiles are *oviparous* animals. Certain species, however, retain their ova in a sort of uterine cavity, formed by dilatation of the oviduct near its termination in the cloaca, until the development of the embryo is so far advanced that the enveloping membrane bursts previously to the expulsion of the ova, so that the young are actually born alive—a mode of production to which the term *ovo-viviparous* is applied. The eggs are relatively large, and are furnished with a very large yolk, for the nutrition of the young animal. They are inclosed in a parchment-like shell, which contains very little calcareous matter. They are usually deposited in warm, sandy places, well exposed to the sun, or in dunghills, in which the heat induced by the putrefactive process facilitates the final stage of embryonic development. Lizards lay 8 to 12 eggs, serpents 10 to 50, tortoises 26 to 26, and crocodiles 20 to 60. In this respect they differ widely from the amphibia, some of which lay as many as 1,200 eggs. The common opinion that, after the expulsion of the eggs, the reptiles take no further care of their progeny, is erroneous. Crocodiles and lizards have been observed to watch the places which they have chosen as their nest; and the pythons (at all events, when in captivity) coil themselves around their eggs, and keep up a temperature considerably above that of the surrounding medium. The sexes are always separate; and the male generative organs, far more highly developed than in amphibians, present peculiarities which, in association with the position of the anal aperture, have been adopted by zoologists as a basis of classification.

In relation to their *habitat*, it may be observed that most of the tortoises and certain serpents are essentially aquatic animals (some inhabiting fresh, and some salt water), which rarely seek the land except to lay their eggs. Serpents, however, as a general rule, affect moist places in the neighborhood of water, though some are inhabitants of dry, sandy deserts. Lizards mostly frequent the sandy districts of hot and tropical regions, and either burrow in the ground or live in holes in trees, walls, etc. Reptiles generally predominate in the warmer regions of the globe, in which alone the largest kinds are to be found. In the northern countries, comparatively few species are found, and these pass a great portion of the year in Hibernation (q.v.) or torpidity. Dr. Carpenter assigns 2,000 as about the probable number of existing species of reptiles. Schinz states that in Europe there are 7 tortoises, 33 serpents, and 35 lizards. See Duméril and Bibron, *Erpétologie Générale, ou Hist. Nat. Complète des Reptiles* (Paris 1834–54, 9 vols.); also (for summary) Huxley, *Anatomy of Vertebrated Animals* (London 1871).

REPUBLIC, n. *rĕ-pŭb′lĭk* [F. *république;* It. *republica*, a republic — from L. *respub′lĭcă* — from *res*, a thing; *publĭcus*, belonging to the people]: state or country in which the supreme power is vested in rulers elected periodically by the people; a commonwealth. REPUB′LICAN, a. *-lĭ-kăn*, pert. to a republic; consonant to the principles of a republic: N. one who favors or prefers the government of a republic. REPUB′LICANISM, n. *-ĭzm*, attachment to a republican form of government; the principles on which it is founded. REPUBLIC OF LETTERS, a term applied to the whole body of literary and learned men.—A *Republic* is a political community in which the executive function is committed to a person or persons elected in some manner by the body of citizens entitled to vote. According to a very loose definition, a R. may vary from the most exclusive oligarchy to a pure democracy; but the term R. is not usually thus applied. The several republics of Greece and that of Rome were, at the outset at least, aristocratic communities. The mediæval republics of Venice, Genoa, and the other Italian towns also were more or less aristocratic: the sovereign power was held to be vested in the franchised citizens; and every function—legislative, executive, or judicial—not exercised directly by that body, could be exercised only by parties deriving their authority from it. But the extent of the franchise, and the mode of exercising it, varied much in these civic communities; and the most prosperous and long-lived was Venice, which was also the most aristocratic of them all. In the 16th c., the Seven Provinces of the Netherlands, on their revolt from Spain, adopted a republican form of government, as did Switzerland on becoming independent of the German empire. Great Britain was nominally a R. for eleven years (1649 to 60). France was a R. 1793 to 1805, and 1848 to 53; and the present R. was proclaimed 1870, Sep. 4. Such govt. as Spain had 1873, Feb.—1874, Dec. 31, was of republican form. Switzerland also is a R.; since 1848 more democratic than formerly. The other republics of Europe are the diminutive states of San Marino and Andorra; some republican elements were till recently traceable in the constitution of the free cities Hamburg, Bremen, and Lübeck. The most important of modern republics is that of the United States of America—dating from its separation from Great Britain. It is not at all an absolute or pure democracy, though its government involves some strongly democratic elements. Mexico, except during the short-lived empire 1863–67, has been a R. since 1824. Ten republics at present exist in S. America—Peru, Chili, Paraguay, Bolivia, Colombia or New Granada, Venezuela, Ecuador, Uruguay, the Argentine Confederation, and Brazil.—In the republics of the ancient world, the franchised classes exercised their power directly, without any system of delegation or representation. The same was at first the case in the Swiss cantons, where, however, representative government has been gradually

introduced. Modern republics have been founded on the representative, not the direct, system, which can hardly exist except in a community that is very small and concentrated as to space. Switzerland is a *federal* R.; the United States also is sometimes so termed; but is rather a *united* R. of many republics—a unique political entity, constituting a single nation under one of the strongest central governments anywhere known; yet with the immense powers of that government strictly defined within a narrow range, while reserving to each several state the broad sphere of government concerning its individual affairs. See CONSTITUTION OF THE UNITED STATES: FEDERAL GOVERNMENT.

REPUBLICAN FORK, or REPUBLICAN RIVER: stream rising in n.e. Colo., flowing through deep cañons and majestic scenery, and through the n.w. part of Kan. into Neb. where it pursues an e. course and drains the s.w. counties, and then again enters Kan. about 150 m. from the e. border of the state. It receives numerous tributaries, some of which, as Medicine Lane Creek, White Man's Fork, and Rock Creek, are of considerable size. By its union with the Smoky Hill it forms the Kansas river, in the state of Kansas. Total length more than 400 miles.

REPUB'LICAN PARTY: see POLITICAL PARTIES.

REPUBLICATION, *rē-pŭb'lĭ-kā'shŭn* [*re*, again, and *publication*]: a new publication of something formerly published.

REPUBLISH, v. ***rē-pŭb'lĭsh*** [*re*, again, and *publish*, to publish a new edition of a work. REPUB'LISHING, imp. REPUB'LISHED, pp. *-lĭsht*.

REPUDIATE, v. *rĕ-pū′dĭ-āt* [L. *repudiātus*, repudiated —from *repudĭum*, a separation, a divorce: It. *repudiare:* F. *répudier*]: to disclaim; to disavow; to discard: to divorce; to refuse to pay or acknowledge any longer, as a debt. REPU′DIATING, imp. REPU′DIATED, pp. REPU′DIATOR, n. *-ā-tėr*, one who repudiates. REPU′DIABLE, a. *-ă-bl*, that may be rejected; fit or proper to be put away. REPU′DIA′TION, n. *-ā′shŭn* [F.—L.]: disavowal; rejection; divorce. REPU′DIA′TIONIST, n. *-ĭst*, one who disavows liability for debt incurred by a predecessor in office, etc.—SYN. of 'repudiate': to disavow; deny; disown; disclaim; divorce; renounce; discard; reject.

REPUDIA′TION OF DEBTS, GOVERNMENTAL. The earliest and only financial failure of the United States was that of its paper currency during the revolutionary war, of which over $200,000,000 had been issued when, 1780, it ceased to circulate as of no value. To the extent that the national govt.—not then fully formed—cancelled debts with this paper money, without redeeming the paper, it repudiated its obligations.

About 1830–40 the debts of various states of the Union assumed serious proportions. The aggregate, 1830, before an era of unwise expenditure set in, was not over $13,000,000. Twelve years later it had reached $213,777,916, divided as follows: middle states, $73,348,072; southern states, $73,340,017; western states, $59,931,553; eastern states, $7,158,274. Foreign investors were the chief holders of American securities, and Pres. Van Buren said, 1840, that the outstanding bonds called for $12,000,000 annually to pay interest—'a sum exceeding half of the ordinary revenues of the whole United States.' Ind., 1841, with not over 100,000 voters, and hardly $3,000,000 of capital employed in trade, was burdened with an interest charge of $1,000,000 a year: the result was hopeless insolvency. Ohio also, 1841, was hardly less deep in difficulties, but, with immense resources and a people of great honesty and energy, managed to make good her credit. Of all the state debts, 1840, Penn. had the largest, $31,000,000: it reached, 1843, nearly $38,000,000. The Philadelphia bank of the U. S. suspended for the third and last time, 1841. It was found to have been plundered by its officers; and that jobbery, favoritism in agencies, and mismanagement had run riot. In Aug. the state failed to pay interest due on its bonds, with the effect of great feeling in England against America, and a permanent loss to Philadelphia of financial prestige, the advantage of which to New York was very great.

The earliest actual repudiation of state debts was by Miss. 1841, July 14, Gov. McNutt (gov. 1837–41), under whose sanction (by signature to legislative acts 1837 and 8) $15,500,000 of state bonds had been issued to the Miss. Union Bank, declared his opinion that the first $5,000,000 had been unconstitutionally issued. Under Mc-

Nutt's successor, T. M. Tucker (gov. 1841–43), elected as an original opposer of the issue of these bonds, their repudiation was an accepted fact, which the legislature indorsed by a resolution 1842. In 1875, when $7,000,000 of the Union Bank and other bonds were still outstanding, on which no interest had been paid since 1842, the legislature adopted, and the subsequent legislature ratified, an amendment to the state constitution, prohibiting payment on 'any bond or bonds now generally known as Union railroad or Planters' Bank bonds.'

The debt of Va., at the close of the civil war, was about $41,000,000. The interest account 1866 stood at $2,250,000. A funding scheme, 1870–1, made the coupons of a new issue, receivable for taxes, a favor to the state's creditors, which the next legislature repealed; and when the courts decided against this, a tax of ½ per cent. was laid on the funded bonds, and, under the name 'readjustment,' repudiation found supporters. The interest account was $3,000,000 in arrears 1875; and 1876 the outstanding bonds amounted to $29,489,326.38. A refunding act was passed 1878, Mar. 11, providing for 18-year and 32-year 3-per-cent. and 4-per-cent. non-taxable bonds. Early in 1879 the McCulloch bill for refunding $8,491,961 was passed. The readjusters now met in convention, and at the election of 1879, Nov., their vote was 77,070, to 69,736 debt-payers. At the session of 1879–80 a bill of which H. H. Riddleberger was author was passed, repudiating over $13,000,000 of state debt, but this Gov. Holliday vetoed. Gen. William Mahone, the readjuster leader, was elected U. S. senator for 1881–87, and H. H. Riddleberger was later chosen senator for 1883–89, the readjusters' fusion having elected their candidates for state offices and a majority of the legislature. Acts were then passed against taking the coupons on state bonds for taxes, as a means of repudiation of the debt confessed by the bonds. See VIRGINIA.

The state debt of Tenn., after the war, stood at about $43,000,000, of which $20,000,000 were disposed of by sales of railroad property. From 1875, when the interest account was greatly in arrears and bonds falling due could not be paid, measures of readjustment began to be considered; and 1877, Dec., a bill passed the house, but not the senate, for retiring the old bonds at 40 per cent. of their face value. Gov. Porter, a year later, reported over $20,000,000 in bonds outstanding, of which $11,000,000 had been declared invalid. A bill was finally passed, 1879, March 28, retiring most of the bonds at 50 per cent., in exchange, by agreement with creditors, for state 'fours.' The election of 1879, Aug. 7, however, went against ratification of this. Another act was passed 1881, May 19, under which less than half the old bonds were exchanged, at 60 per cent. of their face value, for bonds bearing interest 3 per cent. for 2 years, 4 per cent. for the next 2 years, 5 per cent. for the next 2 years, and 6 per cent. thereafter. The election of 1882 was carried by read-

justers opposed to so much favor to creditors as that of the act of 1881; and an act was passed 1883 on the basis of the 1882 platform, and under this about five-sixths of an indebtedness of $27,786,066 had been funded 1885 into 30-year bonds. See TENNESSEE.

The constitutional convention of La., 1879, entertained a proposition to acknowledge about $4,000,000 of the state's bonds, issued under a funding act of 1874, Jan. 24, and to repudiate nearly $20,000,000, A debt ordinance was adopted for retiring bonds of 1874, carrying 7 per cent. interest, in exchange for new bonds on which the interest was to be 2 per cent. for 5 years, 3 per cent. for 15 years, and 4 per cent. thereafter; or holders might have 75 per cent. of their bonds in new 4-per-cent. bonds. The U. S. supreme court decided, 1883, March, that this act of 1880 violated the state's contract of 1874, but that there were no means to compel the state to carry out its contract. See LOUISIANA.

The debts created in Ga., under the managers of early reconstruction after the civil war, were repudiated 1877 to the extent of $6,000,000.

In 1876 Minn. had outstanding over $2,250,000 of $5,000,000 in bonds issued in aid of certain railroads; and the attempt was made by a committee of the legislature to show that these bonds need not be paid, according to the state guarantee of 1858. A bill of 1877, Mar. 1, was rejected by the people, and the disposition to repudiate ran a considerable course, until an act was carried 1880 exchanging the old bonds at 50 per cent. of their face value, for 30-year 4½-per-cent. 'adjustment bonds,' and by the end of 1881 nearly all had been so exchanged.

In 1880 the aggregate bonded debts of all the States amounted to $250,722,081; by 1906 they had been reduced to nearly one-half that sum and nine States were reported as having no bonded debt—Illinois, Iowa, Michigan, Montana, Nebraska, New Jersey, Ohio, Oregon and West Virginia. Nearly every State in the Union now has constitutional prohibitions from borrowing over a certain amount of percentage for public purpose.

REPUGN, v. *rĕ-pūn′* [L. *repug′no*, I fight against (see REPUGNANT)]: in *OE.*, to withstand; to resist. REPUGN′ING, imp. REPUGNED′, pp. *-pūnd′*.

REPUGNANT, a. *rĕ-pŭg′năntˊ* [F. *répugnant*—from L. *repugnans* or *repugnan′tem*, fighting against, opposing—from *re*, against; *pugno*, I fight: It. *repugnante*]: characterized by opposition or contrariety; adverse, with *to*; inconsistent; inimical; in *OE.*, disobedient. REPUG′NANTLY, ad. *-lĭ*. REPUG′NANCE, n. *-năns* [F.—L.], or REPUG′NANCY, n. *-năn-sĭ*, opposition of mind; resistance; aversion; dislike.—SYN. of 'repugnance': dislike; antipathy; hostility; hatred; aversion; reluctance; unwillingness; inconsistency; irreconcilableness; contrariety; resistance;—of 'repugnant': opposed; adverse; contrary; opposite; inimical; hostile; inconsistent; irreconcilable.

REPULSE, v. *rĕ-pŭls′* [L. *repulsus*, driven back; *repulsa*, a refusal, a denial—from *re*, back; *pello*, I drive: It. *ripulsa*]: to drive back by force; to repel: N. a being checked or driven back by force; refusal; denial. REPULS′ING, imp. REPULSED′, pp. *-pŭlst′*. REPUL′SER, n. *-sẽr*, one who repulses. REPUL′SION, n. *-pŭl′shŭn* [F.—L.]: the act of driving back; the power by which bodies or their particles, under certain circumstances, are made to recede from each other (see below). REPULSE′LESS, a. *-pŭls′lĕs*, that cannot be repelled. REPULS′IVE, a. *-ĭv*, tending to repulse; cold; reserved; forbidding. REPULS′IVELY, ad. *-lĭ*. REPULS′IVENESS, n. *-nĕs*, the quality of being repulsive or forbidding.

REPUL′SION: term for a hypothesis formerly much in use in physics to account for a group of phenomena; but which, like the terms Caloric, Luminous Corpuscles, and other crude hypotheses of mediæval times appears doomed to extinction. The apparent R. between the particles of a gas, in virtue of which it exerts pressure on the containing vessel, is now known to be due to motion (see HEAT). A wet cork and an oiled one, floating on water, repel each other—a phenomenon fully accounted for by capillary *attraction;* as is that of the apparent repulsion of mercury by glass, which is shown to be due to the fact, that mercury attracts itself more than it attracts glass. No one now believes that a balloon rises while a stone falls, because the balloon is repelled, and the stone attracted, by the earth: this is a very good example, because it clearly shows how apparent R. may be the result of attraction. The earth attracts the balloon *less* than it attracts an equal bulk of the medium (air) in which it floats; consequently, the pressure of the air on the balloon is more than sufficient to support its weight. The moon raises tides not only on the side of the earth nearest her, but also on the side furthest from her. No one imagines that she attracts the nearer water, and repels the further. We know that she attracts the nearer water more, and the further less, than she

attracts the earth; and that the apparent R. is thus merely a difference of attractions.

It is not quite so clear how we are to account generally for R. in Electricity (q.v.), Magnetism (q.v.), and electro-magnetism, though many of these phenomena are known (especially by the beautiful experimental researches of Faraday) to bear explanations precisely analogous to that of the balloon above alluded to. There are also very curious problems, apparently involving R., connected with the behavior of the tails of comets. But it is reasonable to expect that we shall soon be able to account for all these phenomena by simple differences of attraction on the body influenced and the medium which surrounds it. Our real difficulty will thus be reduced to the explanation of attraction itself, which, indeed, promises to be a problem of a far higher order of complexity. For an account of some modern speculations on this subject, see FORCE.

REPURCHASE, v. *rē-pėr'chās* [*re*, again, and *purchase*]: to buy back: N. the act of buying again what has been sold.

REPUTE, v. *rĕ-pūt'* [F. *réputer*, to repute, to esteem—from L. *reputārĕ*, to compute, to calculate—from *re*, again; *puto*, I think: It. *reputare*]: to estimate; to think; to hold; to reckon: N. character, either good or bad; established opinion; general estimation. REPU'TING, imp. REPU'TED, pp.: ADJ. reckoned; accounted. REPUTE'LESS, *-lĕs*, disgraceful; without repute. REPUTABLE, a. *rĕp'ū-tă-bl*, having the good opinion of men; held in esteem; respectable; honorable. REP'UTABLY, ad. *-tă-blĭ*. REP'UTABLENESS, n. *-bl-nĕs*, the quality of being reputable. REP'UTA'TION, n. *-tā'shŭn* [F.—L.]: good name; character either in good or bad sense in public opinion; credit. REPUTEDLY, ad. *rĕ-pū'tĕd-lĭ*.—SYN. of 'reputable': creditable; honorable; estimable; respectable;—of 'reputation': repute; regard; estimation; honor; fame; esteem: credit; character; renown.

REPU'TED OWN'ER, in English Law: bankrupt trader who apparently possesses goods which he is holding with the consent of the real owner. Because a trader's holding such goods is fitted to give the impression of a greater capital or stock than he possesses, and thereby to obtain for him greater credit, it is provided that the goods so held may be ordered by the bankruptcy court to be sold for benefit of the creditors.—In the United States it has been held usually that one having possession of and apparent title to goods cannot, on those grounds, give real title in them to a purchaser; but N. Y. statutes provide somewhat differently.

REQUA-BATTERY, n. *rē'kwa-băt'ėr-ĭ* [etym. doubtful]: a kind of mitrailleuse, consisting of a number of rifle breech-loading barrels arranged upon a horizontal plane on a light field carriage. They were much used in the attack upon Charleston 1863 by the U. S. forces under Gillmore.

REQUEÑA, *rā-kān′yâ :* town of Spain, in the modern province of Cuença, about 80 m. s.e. of the town of Cuença. Its people are employed in the manufacture of woolen, cotton, and silk fabrics. Pop. 14,500.

REQUEST, n. *rĕ-kwĕst′* [OF. *requeste ;* F. *requête*, a request—from L. *rĕquisītus*, sought or searched for—from *re*, again; *quæsītus*, sought; *quærĕrĕ*, to seek]: a desire expressed to another for something to be granted or done; state of being desired; the thing asked or solicited; petition; prayer; entreaty; demand: V. to express a desire for; to solicit respectfully. REQUEST′ING, imp. REQUEST′ED, pp. REQUEST′ER, n. *-ėr*, one who requests, IN REQUEST, in demand; in credit or reputation. COURT OF REQUESTS, in England, an anc. court of equity, inferior to the court of chancery—abolished in the reign of Charles I. Various local tribunals, also so named, for recovery of small debts, have been superseded by the county courts.—SYN. of 'request, v.' to ask; solicit; petition; beseech; desire; beg; pray; entreat; supplicate; implore; crave.

REQUICKEN, v. *rē-kwĭk′ĕn* [*re*, and *quicken*]: in *OE.*, to reanimate; to inspire with new life.

REQUIEM, n. *rē′kwĭ-ĕm* [L. *requĭēs* or *requĭem*, rest, repose, as from labor, suffering, or care—from, *re*, again; *quĭēs*, rest: F. *requiem:* It. *requie*]: dirge or grand and solemn musical service for the dead in the Rom. Cath. Church; consisting in the celebration of the mass *Pro Fidelibus Defunctis* (For the Faithful Departed), the first words of the Introit of which are *Requiem æternam.*

REQUIN, n. *rĕk′wĭn* [F.]: the white shark; the *Carchărĭas vulgāris.*

REQUIRE, v. *rē-kwīr′* [L. *requīrĕrĕ*, to want, to require —from *re*, back or again; *quæro*, I seek: F. *requérir*]: to ask, as of right or by authority; to demand; to claim; to call for; to make necessary; to need; in *OE.*, to request. REQUI′RING, imp. REQUIRED′, pp. *-kwīrd′.* REQUI′RER, n. *-rėr*, one who requires. REQUI′RABLE, a. *-rā-bl*, capable of being required. REQUIRE′MENT, n. *-mĕnt*, demand; claim; in the plu., things for the supply of needs; necessaries.—SYN. of 'require': to enjoin; prescribe; order; demand; exact; direct; ask; need.

REQUISITE, a. *rĕk′wĭ-zĭt* [L. *requisītus*, needed, being requisite; *requīrĕrĕ*, to require—from *re*, back or again; *quæro*, I seek: It. *requisito*, requisite]: necessary; needful; essential: N. something required by the nature of things, or by circumstances; a want; a need. REQ′UISITELY, ad. *-lĭ.* REQ′UISITENESS, n. *-nĕs*, the state of being requisite or necessary. REQ′UISI′TION, n. *-zĭsh′ŭn* [F.—L.]: written request or invitation; demand; in international or interstate law, demand by the authorities of a state or nation on those of another for the rendering or extradition of an alleged criminal (see EXTRADITION). In *mil.*, a written demand for forage, food, arms, etc. It is closely related to contribution,

but differs from it in that the requisition is a demand for supply of food, animals, labor, etc., for the use of the party making it, while the contribution is a cash payment required either to furnish supplies to the invaders or to give them the means for carrying on the government. In common use, the term requisition often includes everything under the head of contribution. The old custom of imposing heavy fines on an invaded country has been greatly modified, and civilized nations have generally adopted the principle that in war the rights of private citizens should be respected, and that when it is necessary to take their property receipts should be given for the same in order that payment may be made after the war. REQUISITION, v. to make a requisition upon; to demand; to ask. REQUISITIVE, a. *rĕ-kwĭz′ĭ-tĭv*, expressing or implying demand.—SYN. of 'requisite, a': necessary; essential; needful; indispensable.

REQUITE, v. *rĕ-kwīt′* [*re*, again, and *quit*]: to make a return for treatment, either good or evil; to repay; to recompense; to avenge. REQUI′TING, imp. REQUI′TED, pp. REQUI′TER, n. *-tėr*, one who requites. REQUI′TAL, n. *-tăl*, the act of requiting; return for treatment, good or bad; retribution; recompense.—SYN. of 'requite': to compensate; pay; repay; remunerate; reward; recompense; satisfy; punish; retaliate.

REREDOS, n. *rēr′dŏs* [F. *arrière*, behind; *dos*; L. *dorsum*, the back]: in *arch.*, wall at the back of an altar, seat, large fireplace, etc.; screen; partition wall. In churches, the R. is usually in the form of a screen behind the altar, and rising 3 to 6 ft. above it, detached from the e. wall, and invariably ornamented with niches, statues, etc., or with paintings or tapestry. Very fine examples are at Durham, St. Albans, etc., in England; in Trinity Church, New York; and other churches.

Reredos, Salisbury Cathedral.

REREE, n. *rĕr′ē*: a plant, *Typha angustĭfolĭa*, the leaves of which are used in the N. W. Provinces of India for making mats.

REREMOUSE, n. *rēr′mows* [AS. *hreremus*, a bat—from AS. *hreran*; Icel. *hræra*; Ger. *rühren*, to stir]: the bat: also spelt REARMOUSE.

RE-RESOLVE, v. *rē′rĕ-zŏlv′* [*re*, again, and *resolve*]: to resolve a second time.

REREWARD, n. *rēr′wawrd* [from *rear*, and *ward*]: the part of an army which marches in the rear.

RES, n. *rēz* [L. a thing]: a thing; a matter; a point; a cause or action. Used in legal phrases, as *res gestæ*, things done; *res judicata*, a matter already adjudicated upon.

RESACA DE LA PALMA, *rā-sâ'kâ dā lâ pâl'mâ*, BATTLE OF: engagement, in the Mexican war, 1846, May 9, in a ravine (from which the battle is named) which crosses the Matamoros road about three m. from the Rio Grande. The battle ground, thickly covered with palm trees, was in Cameron co., Tex. The Mexican force, led by Gen. Arista, numbering 6,000 men, was quickly defeated by 2,000 U. S. troops under Gen. Taylor.

RESAIL, v. *rē-sāl'* [*re*, again, and *sail*]: to sail back.

RESALE, n. *rē'sāl* [*re*, again, and *sale*]: a second sale.

RESALUTE, v. *rē'să-lōt'* [*re*, again, and *salute*]: to salute or greet anew.

RESCIND, v. *rĕ-sĭnd'* [F. *rescinder* —from L. *rescindĕrĕ*, to abolish, to rescind—from *re*, back or again; *scindĕrĕ*, to cut, to split: It. *rescindere*]: to render null or make void; to revoke; to repeal. RESCIND'ING, imp. RESCIND'ED, pp.—SYN. of 'rescind': to abrogate; annul; reverse; void; vacate; revoke; repeal; recall.

RESCISSION, n. *rĕ-sĭzh'ŭn* [F. *rescision*—from mid. L. *rescissĭōnem*, an annulment, as of deeds—from L. *rescissus*, abolished: It. *rescissione*, rescission (see RESCIND)]: act of abrogating or annulling. RESCISSORY, a. *rĕ-sĭs'sẽr-ĭ* [mid. L. *rescissōrĭus*]: having power to rescind.

RESCRIBE, v. *rĕ-skrīb'* [L. *rescrībĕrĕ*, to write in reply to—from *re*, again; *scrībo*, I write]; to write back; to write over again. RESCRI'BING, imp. RESCRIBED', pp. *-skrībd'*.

RESCRIPT, n. *rē'skrĭpt* [L. *rescriptus*, answered in reply to—from *re*, again; *scriptus*, written; *scrībo*, I write]: an answer in writing: eminently, the answer of a pope or an emperor to one consulting him on any question of jurisprudence officially propounded to him. *Rescripta principis* were one of the authoritative sources of the civil law, and consisted of the answers of the emperor to those who consulted him, either as public functionaries or as individuals, on questions of law. They were often applied for by private persons, especially women and soldiers, to solve their doubts or grant them privileges. The rescripts directed to corporate and municipal bodies were known as *Pragmaticæ sanctiones*, a name which has found its way into the public law of Europe: see PRAGMATIC SANCTION. Rescripts might gradually come to have the force of law, so far as their determinations in particular cases were of general application. RESCRIPTION, n. *rĕ-skrĭp'shŭn* [F.—L.]: the answering of a letter

RESCUE, v. *rĕs'kū* [OF. *rescousse,* a rescue; *rescousse,* to recover: It. *riscuotere,* to fetch a thing out of pawn, —from L. *re,* back or again; *exeutĕrĕ,* to take away by force—from *ex,* out; *quatĕrē,* to shake, drive]: to set free from danger or restraint; to deliver from evil in any way; to recapture; to liberate: N. deliverance from danger or restraint; release; liberation; recapture; in *law,* illegal delivery and discharge of a prisoner or of goods out of the custody of the law. If, e.g., a tenant whose goods are distrained for rent, take them by force from the officer, the distrainer has right of action against the tenant or person who rescues the goods. When a prisoner is in custody for felony, and is rescued, the rescuer commits a felony. RES'CUING, imp. RES'CUED, pp. *-kūd.* RES'CUER, n. *-kū-ėr,* one who rescues.—SYN. of 'rescue, v.': to liberate; recapture; retake; deliver; save; free.

RESEARCH, n. *rĕ-sėrch'* [*re,* again, and *search:* comp. F. *recherche,* inquiry, search]: a laborious, or continued, search after facts or principles; investigation; examination. — SYN.: inquiry; scrutiny; examination; investigation.

RESEAT, v. *rē-sēt'* [*re,* again, and *seat*]: to seat anew.

RESECTION, n. *rē-sĕk'shŭn* [*re,* again, and *section*]: the act of cutting or paring off. RESECTION (or EXCISION) OF A JOINT: surgical operation in which the diseased portion of the bones entering into the formation of a joint are cut away, thereby obviating the necessity of amputation of the limb, or restoring a limb to practical usefulness much sooner than if the disease were left to Nature to cure.

RESEDA, n. *rĕ-sē'dă* [L. *resēda,* the mignonette—from *resēdo,* I calm or appease, so called from its supposed virtues as an external application]: genus of favorite flowering plants known as mignonette, ord. *Resedāceæ.* RESEDACEÆ, natural order of exogenous plants, mostly herbaceous; having alternate leaves; terminal spikes of hermaphrodite irregular flowers; the calyx of 4-7 unequal segments; the corolla of 4-7 petals, alternate with the segments of the calyx, the lower petals entire, the upper much cut; the stamens 10-30, inserted on a fleshy receptacle; the germen free, one-celled; the fruit a many-seeded capsule, three-horned, and often open at the apex, so as to expose the seeds, which are kidney-shaped. There are about 40 known species, mostly natives of Europe and w. Asia, and mostly mere weeds. Weld (q.v.), otherwise called Dyer's mignonette, and common Mignonette (q.v.), are the noticeable species.

RESEEK, v. *rē'sēk'* [*re,* again, and *seek*]: to seek again.

RESEIZE, v. *rēsēz':* to seize a second time. RESEIZURE, n. *rē-sēzh'ûr,* the act of seizing again.

RESELL, v. *rē-sĕl'* [*re*, again, and *sell*]: to sell again what has been bought or sold.

RESEMBLE, v. *rĕ-zĕm'bl* [OF. *resembler*—from L. *re*, again; *simulārĕ*, to make like—from *simĭlis*, like: F. *ressembler*]: to be like; to possess similar external form or structure; to possess like or similar qualities; in *OE.*, to liken. RESEM'BLING, imp. RESEM'BLED, pp. *-bld.* RESEM'BLANCE, n. *-blăns*, likeness; state of having similar external form or structure; image; similarity.—SYN. of 'resemblance': likeness; representation; image; similarity, similitude; semblance.

RESEND, v. *rē-sĕnd'*: to send again or back.

RESENT, v. *rĕ-zĕnt'* [F. *ressentir;* It. *risentire*, to resent—from L. *re*, again; *sentīrĕ*, to feel]: to have a deep sense of; to take ill; to consider as an injury or an affront; to be somewhat provoked at. RESENT'ING, imp. RESENT'ED, pp. RESENT'ER, n. *-ẽr*, one who resents. RESENTMENT, n. *-mĕnt* [F. *ressentiment*]: the feeling of anger or irritation caused by a sense of injury or insult; anger; prolonged anger. RESENT'FUL, a. *-fûl*, easily provoked to anger, and retaining it long. RESENT'FULLY, ad. *-lĭ.*—SYN. of 'resentment': irritation; anger; vexation; displeasure; grudge; wrath; rage; fury; indignation; choler; gall; ire.

RESERVATION OF BENEFICES, PAPAL: the taking of the bestowal of certain church benefices and dignities out of the hands of the local church rulers and the attribution to the Roman Pontiff of the right to confer the same; or, the requiring of bishops, chapters and other persons or ecclesiastical bodies possessing the right of conferring benefices, that in case of vacancies they should bestow such benefices on persons nominated by the Pope. One reason alleged in favor of this practice was that thus the several national churches were linked more closely by personal ties of gratitude and affection to the central see, and through it to each other; another was that thus the Supreme Pontiff was provided with the means of rewarding those who had labored meritoriously.

RESERVATION OF THE EUCHARIST: the keeping of the sacramental species against emergent occasions, as the communion of the sick in their homes, for the Mass of the Presanctified on Good Friday, for the rite called Benediction of the Blessed Sacrament, and for perpetual adoration. Mention is made in authors of the custom of bishops sending to one another the Eucharist in token of Christian union and fraternity. The sacred host is now customarily reserved in all Catholic churches, being kept usually in the tabernacle of the high altar in the Latin Church, and in Greek churches in a special receptacle, *artophorion*, behind the altar: whenever it is reserved, a lamp is kept ever burning before it.

RESERVA'TION, MENTAL [Lat. *reservatio* or *restrictio mentalis*]: act of reserving or holding back some word or clause necessary to convey fully the meaning really intended by the speaker. It differs from equivocation (Lat. *equivocatio* or *amphibolia*) in this, that in the latter the words employed, though doubtful, and perhaps not fitted naturally to convey the real meaning of the speaker, are yet, absolutely speaking, and without the addition of any further word or clause, susceptible of that meaning. Thus, an example of an equivocation would be: 'I did not write this libel,' meaning, 'I did not perform the mechanical operation of *writing it with a pen*,' though I had really *composed* and issued it. A mental R, might be involved in the same words, if one were to say: 'I did not write this libel,' mentally withholding the word 'to-day,' though he had written it 'yesterday,' or on some earlier day. Few questions in casuistry have excited more controversy, or have been the subject of fiercer recrimination, than that of the lawfulness of equivocation and mental R. In the celebrated *Letters* of Pascal (q.v.) against the Jesuits, it was one of the most prominent, and as he used it, the most effective topics; and Pascal's charges against the Jesuit casuistry of that day have been repeated in almost every popular controversy on the subject since. There are several varieties of mental R., differing from each other, and all differing from equivocation under its several forms. But as regards the morality of the subject, all the forms of language calculated to deceive may be classed together, and may be treated according to the same common principles. Mental R. is of two kinds, *purely mental* and *not purely mental*. By the former is meant a mental R. which cannot be detected, whether in the words themselves or in the circumstances in which they are spoken. Of this kind, would be the mental reservation implied if a person, on being asked if he had seen A. B. (whom he really had just seen *walking* by), were to reply: 'I have not seen him,' meaning '*riding on horseback*.' A 'not purely mental' R. is that which, though not naturally implied or contained in the words, may nevertheless be inferred or suspected, either from them or from the circumstances in which they are used. Of this kind would be the mental R. of a servant, in giving the ordinary answer to a visitor's inquiry for his master: 'Not at home,' though his master were really in the house; or that of a confessor, who, in a country where the privileges of the secret of the confessional are known and admitted, on being asked whether a certain person had committed a crime, which the confessor knew from his confession that he had committed, should answer: 'I do not know,' meaning 'outside of the confessional.' And, in general, all such doubtful forms, whether of mental R. or of equivocation, may be divided into *discoverable* and *undiscoverable*. Much, though certainly not all, the odium against the casuists for their teaching on this head, has arisen from the con-

fusion of their views as to these two classes of mental R.; and the witty ingenuity with which Pascal mixed examples of both, and applied to one what was really said of the other, did more to damage the theological reputation of his adversaries, as a school, than any of the genuine really objectionable decisions which he cited from the writings of individual divines. Mental R. has formed a subject of discussion for Prot. as well as Rom. Cath. divines; but without entering into a detailed history of this branch of casuistry, we state briefly the chief principles on which the decisions of the most approved writers, especially of the Rom. Cath. school, are founded.

First, 'purely mental' reservations, and 'absolutely undiscoverable' equivocations, are held to be in all cases unlawful, such forms of speech being actually and only falsehoods; inasmuch as they have but one real sense, which is not the sense intended by the person who uses them, and hence can serve only to deceive. This doctrine is held by all sound Rom. Cath. casuists, and the contradictory doctrine is expressly condemned by Pope Innocent XI. (Propp. 26, 27). On the contrary, mental reservations 'not purely mental, and 'discoverable' equivocations, are held to be not inconsistent with truth; and, in certain circumstances, when there is necessity or weighty reason for resorting to them, allowable. For the absolute admissibility of the expedient of mental R. and of equivocation in such circumstances, casuists allege Scriptural precedent from Gen. xx. 12; Matt. xi. 14; Acts xxiii. 6; and other passages; and the principles on which their use, in such case, is defended, are (1), that there is supposed to be in the circumstances justification, and even necessity, for not making known the whole truth; (2) that the mental R. in the case supposed does not amount to more than a mere *withholding the entire truth*, inasmuch as what is stated is true, and the real meaning of the speaker is *contained in it, and discoverable from it;* and the false construction put on it by the hearer, though permitted through necessity or grave reason by the speaker, is not *positively* put forward by him. A historical example of such equivocation or R. is in the well-known answer of St. Athanasius to the question of the party in pursuit of him, and who, overtaking him, but not knowing his person, asked what way Athanasius had gone: *He is not far off*, replied Athanasius, and the party passed on in pursuit. A less easily discoverable equivocation is ascribed to St. Francis of Assisi, who, when a gang of robbers in pursuit of a traveller asked him whether he had seen the traveller pass by, put his hand up the sleeve of his habit, and replied: 'He did not pass *this* way,' meaning, 'up his sleeve.' And an ordinary example of discoverable mental R. is that of a person who, being asked by one to whom he could not with safety give a refusal, whether he has any money, should reply: 'No,' meaning, 'none to lend to you.' In order, however, to justify

the use of these devices of speech, casuists require that there shall be some grave and urgent reason on the speaker's part; e.g., the necessity of keeping a state secret, or a secret of the confessional, or of a professional character, or even the confidence intrusted by a friend, or the ordinary and fitting privacy requisite for the comfort and security of domestic life, and for the peaceful intercourse of society; and that the concealed sense of the form of speech employed, though it may be *actually undiscovered*, and even unlikely to be discovered, may yet be, in all the circumstances, *really discoverable*. On these two leading theoretical principles, the majority of casuists are agreed. But a wide field for practical discussion lies between them, in the variety of senses which may be attached to the phrases 'not purely mental' and 'discoverable;' and it is in the practical interpretation of these terms that some of the casuists have found scope for introduction of the lax decisions which have brought odium on casuistry. Much of this odium has fallen upon the Society of the Jesuits, to such a degree, that their name has been popularly associated with the worst forms of the practice of mental R.: see JESUITS: PASCAL.

RESERVATIONS, INDIAN: when the settlers from Europe came to realize that the Indians had human rights, and ought not to be enslaved or exterminated, the rule was generally adopted of confining the tribes to reservations, both for their own protection from unprincipled whites, and for the security of the white population. New York, Massachusetts, Connecticut, Rhode Island and other States enforced this policy in the colonial period and after independence, and the United States government has carried it out from an early date. Southern tribes east of the Mississippi were removed to the Indian Territory, designated by solemn pledge of the National government as a permanent home for their race, and there some of the tribes have achieved a high degree of civilization, and gained considerable wealth. Other tribes, chiefly from the Southwest, have been gathered into the Indian Territory, but large Indian reservations, mainly of Sioux, are still maintained in the Northwest, and altogether the various tribal reservations in the different States and Territories number about 185. The reservations are carefully guarded against intrusion by unscrupulous whites, and provision is made for the intellectual and physical welfare of the Indians, and for leading them to adopt civilized methods of self support, instead of depending on the chase, which now offers only the most precarious returns, or on government aid, which, however, is not withdrawn under any circumstances while an Indian is in need of it.

RESERVA'TUM ECCLESIAS'TICUM: a provision of the religious Peace of Westphalia, celebrated in German history. By this clause of the treaty of Westphalia (1549), it was enacted that if the holder of any ecclesiastical dignity, or of any territorial jurisdiction or property annexed to such ecclesiastical dignity, should change his religion, the dignity, territorial jurisdiction, or property held by him, should not be thereby alienated from the church from which he seceded, but should be still 'reserved' for that church, and for the legitimate successors of the seceder. It was chiefly out of the disputes regarding the violations of the R. E. that the Thirty Years' War arose.

RESERVE, n. *rĕ-zėrv'* [F. *réserver*—from L. *reservārĕ*, to reserve—from *re*, back; *servo*, I keep: It. *riservare*]: something kept in store for future use; in *mil.*, a body of troops kept in the rear of an army in action to give support where required, or to meet any contingency (see RESERVE, in Milit.): a laying up and keeping for a future time; reservation or exception, as, a sale by auction without *reserve;* something concealed in the mind; caution or restraint in personal behavior; shyness; in *OE.*, exception; prohibition; exception in favor: V. to keep in store for future use; to withhold from present use for another purpose; to retain; to keep. RESERV'ING, imp. RESERVED', pp. *-zėrvd':* ADJ. restrained; shy; modest; not frank and open. RESERV'EDLY, ad. *-ĕd-lĭ.* RESERV'EDNESS n. *-ĕd-nĕs*, the state of being reserved; want of frankness or openness. RESERV'ER, n. *-ėr*, one who reserves. RESERVATION, n. *rĕz'ėr-vā'shŭn* [F.—L.]: the act of reserving or keeping back; state of being kept in reserve; concealment in the mind (see RESERVATION, MENTAL): exception in favor; something reserved: in *law*, term used in lease, also in grants of a less estate than the fee-simple, signifying the part not given away; used also in reference to rent, denoting a rent out of the premises which is reserved by the landlord for himself (see RENT). In *OE.*, state of being treasured up; custody. IN RESERVE, in keeping for other or future use; in store.—SYN. of 'reserve, n.': retention; limitation; reservation; coldness; shyness; modesty; backwardness; restraint; caution.

RESERVE', in Military and Naval Affairs: term with several meanings. In a battle, the R. is a body of troops held in the rear, generally out of fire, and kept fresh, that they may intervene with decisive force at any point where yielding troops require support, or an advantage gained needs powerful following up.—The R. of ammunition is a magazine of warlike stores, situated between an army and its base of operations, sufficiently retired from the front to be safe from sudden raids of the enemy, and at the same time advanced enough to allow of the supply actually in the field being speedily replenished.

The R. of a nation is that force on which the national

defense is thrown, when its regular armies have failed in securing its safety. This reserve may be the *levée en masse* of the whole adult male population, or it may consist of a smaller section of the people duly trained to arms. The latter is the preferable system, when the arms of scientific modern warfare are to be brought into action. In different countries, the reserves are organized on very different principles. In Great Britain, they comprise the army reserve, the enrolled pensioners—both of which consist of soldiers who have served in the army—the militia, yeomanry, volunteers, and trained constabulary. The numbers of the reserve forces provided for in the army estimates 1902-03, were as follows: Reserves, 80,000; Militia Reserves (new), 50,000; Militia, 131,737; Militia of Channel Islands, Malta and Bermuda, 6,002; Yeomanry, 35,164; Volunteers, 346,769; Total, 669,672.

In the United States there is officially no army reserve under direct control of the war department; but the militia or national guard of the different states under the immediate control of the governors, constitutes an effective force which may be called into the general service by the respective governors on the order of the president. This force aggregated (1903) 96,808 inf.; 4,952 cav.; 6,671 artil.; total, 183,596, with 1,791 commissioned officers. The number of men available for military duty was 8,727,500.

The reserves of all grades in foreign navies aggregate: Austria, 7,500; France, 150,000; Germany, 34,000; Great Britain, 55,000; Italy, 14,000; Netherlands, 3,500; Russia, 22,000; Spain, 6,700; and Sweden and Norway, 3,000-1,100.—In the United States, congress passed a bill, 1891, authorizing the organization of a naval militia in the seaboard states, the whole to form a national naval reserve; and in 1903, this was organized in 16 states and the district of Columbia, with 433 officers and 4,447 men. See NAVAL RESERVE: also ARMIES: NAVIES, MODERN: VOLUNTEERS: MILITIA: WAR SERVICES: YEOMANRY.

RESERVED CASES, in the canon law of the Roman Catholic Church, certain sins the power of absolving from which is reserved to the ecclesiastical superior himself—the pope, the bishop, the ruler of a monastery or other religious house. The 'faculties' conferred regularly on priests who administer the sacrament of Penance do not extend to reserved cases, and the penitent must sue personally or through an intermediary for absolution by the pope, bishop or other superior to whom the case is reserved. Bishops have the right to limit the absolving power of those who under them have cure of souls, but in the United States this right is seldom exercised, and the 'faculties' accorded in this country to rectors of churches and other *confessarii* is practically as large as that possessed by the ordinaries themselves.

RESERVOIR, n. *rĕz'ĕr-vwawr'* [F. *réservoir,* a reservoir—from mid. L. *reservatōrĭum,* a storehouse—from L. *re,* again; *servo,* I keep or preserve]: receptable for storing water for any purpose, but chiefly for supply of towns, driving machinery, feeding canals, irrigation, or some process of manufacture. The construction of a reservoir is of much importance, and requires great engineering skill. In the selection of a site the great object should be to choose a position which will give the means for collecting a large supply of rainfall with as little recourse as possible to artificial constructions. An advantageous site would be, for instance, in the narrow gorge of a valley through which a stream passes, and at a place where the gorge widens out on the side looking toward the source of the stream. Particular care, however, is necessary to discover whether the positon chosen communicates with the courses of underground waters or springs, as disastrous results have frequently been occasioned by ignoring this. As a general rule, the best and safest method is to establish reservoirs in valleys filled in with clays derived from the decompositon of the primary formations, which are very slightly permeable. The embankments or dams may be constructed either of masonry or earth-work, the latter being generally the more economical method. Where the reservoir requires to be constructed on perfectly level ground, the excavation should be calculated so as to equal the embankment. The earth-work of dams should be as much as possible of material —such as a mixture of clay and gravel—which would resist the infiltration of the water; but as it is impossible always to obtain such material in sufficient quantities, engineers have recourse to a device which consists in the construction of a kind of wall termed a *puddle-wall,* formed in the middle of the embankment. This wall is constructed of well-worked clay, the foundation of the puddle being a trench dug down to impervious rock or clay, and its breadth should be on an average about one-third the height of the embankment. The inside slope of the embankment is usually 1 perpendicular to 3 horizontal, sometimes is it steeper; the outside slope is 1 perpendicular to 2 horizontal; and the height above the surface of the water is 4 to 7 feet. The earth-work ought to be constructed of thin layers, carefully rammed so as to secure their equal settlement; the inner face requires to be protected by stones in order to resist the action of the water. The waste-weir, to admit of the surplus water flowing over, should be from 4 to 6 feet below the surface line of the embankment, built of strong mason-work, and of a width such that with a flow of 2 feet over the crown it should be able to discharge all the water brought down by the severest floods ever known to fall upon the basin supplying the reservoir. Many of the accidents that have occurred were due to deficiencies in the waste-weirs. In the reservoirs of which the dams are built of masonry

there is no necessity for a waste-weir, as then the water may be allowed to overflow the wall, there being no fear of its endangering the work. The outlet at the bottom, by which the water to be used is drawn off from the reservoir, may consist either of a tunnel, culvert, or iron pipes provided with suitable sluices, and these should be so constructed that access may be had to them even when the reservoir is full.

The true principles for the proportioning of masonry dams were not thoroughly investigated until about the middle of the 19th century and subsequently. This was first done by French engineers, and many such dams have since been constructed in France, Algeria, the United States, etc. The highest of all such dams is that of the New Croton reservoir, New York, its height being 248 feet; thickness at bottom, 185 feet; at top, 16. The first great masonry dam built in France on the newer principle was that of Furens (1860-5); height, 184 feet; thickness at bottom, 162; at top, 11. The San Mateo reservoir dam, near San Francisco, is 170 feet high; thickness at bottom, 176; at top, 20. The Periyar dam, India (1890-5), has a height of 173 feet; bottom thickness, 139; top, 12. In the famous reservoir of Alicante, Spain, executed 1579-94, the wall is 67 feet thick at the top, 112 feet at the bottom, and the height 141 feet. In England the preference is generally given to earthen dams. Sometimes natural lakes are used as reservoirs, instances of which are Loch Katrine, for the water supply of Glasgow, and Lake Thirlmere, in Cumberland, for the supply of water to Manchester. Distributing reservoirs for towns are generally built of masonry, but are sometimes of iron. They ought to be placed high enough to command the highest part of the town, and ought to be capacious enough to contain half a day's supply, their chief use being to store the surplus water during the night. Among notable modern storage reservoirs for towns are those of the Vyrnwy, for supplying Liverpool, containing 11,900 million gallons; Vehar (10,800 million gallons), for Bombay; San Mateo (31,000 million gallons), for San Francisco; and the New Croton (32,000 million gallons), for New York.

The Ashokan dams in the Catskill mountains, where an immense water supply is to be impounded for New York city, are among the greatest structures of the kind in the world. There are several of them, that, standing alone, would deserve mention, but they are completely overshadowed by the Oliver Bridge dam, the largest of the series. The Esopus creek watershed has an area of 255 square miles. Its waters will be impounded by the construction of a huge dam 220 feet in maximum height and 5,650 feet in length, which will be built across the valley of the Esopus at what is known as the Olive Bridge site. The dam will create what will be known as the Ashokan reservoir, which will be 2½ m. in width, with a full level

capacity of 170 billion gallons, and will be capable of supplying the city with 250 million gallons of water a day. It will be built partly of solid masonry and partly of earth. The masonry portion, which will extend for about 1,000 feet and occupy the center of the dam, will be built in the general cross section style, which has lately been adopted. The width of the base will, of course, vary with the depth of the foundations; but at the center it will be not far from 200 feet. Its height taken at the same point will be 220 feet. The earth-and-core-wall portions of the dam will extend from the masonry middle section to a junction with the valley on one side, and some high ground on the other. The total length of the dam will be 5,650 feet. In addition to the dam there will be a series of dikes which will be built across depressions in the country and serve to hold the water at the desired level. Beyond the dikes will be a large waste weir. The dikes will constitute a very important work, for together with the waste weir they will have a total length of 3.8 m.

From the dam the water will flow by gravity through a huge steel-and-concrete aqueduct 17 feet in the clear in height and 17½ feet wide, which will be built partly by the cut-and-cover method and partly in tunnel. It will extend to the westerly bank of the Hudson river, which will be reached at a point between Cornwall and West Point. Originally it was the intention to carry the aqueduct below the Hudson river at New Hamburg; but the preliminary borings at this and other sites proved that it would be difficult to find a rock sufficiently clean from fissures and other imperfections. An examination of various sites by geologists led to the ultimate selection of the crossing near Cornwall, where it was believed that a thoroughly sound and suitable rock would be found at a depth not too prohibitive. The aqueduct passes through the mountains and reaches the westerly shore of the Hudson river at an elevation of 400 feet above tide level. Here a vertical shaft will be sunk to a depth of probably not less than 700 feet below the river surface, or 1,100 feet below the level of the aqueduct. In the bottom of the shaft a tunnel will be driven horizontally beneath the river to connect with another vertical shaft of practically equal depth on the easterly bank of the river. From this point it will be constructed through the mountains until it reaches the new Croton reservoir. Here connections will be made to enable the water to be drawn directly from the Ashokan reservoir into the Croton reservoir, with a view to augmenting the Croton supply until such time as the aqueduct from Ashokan to New York city shall have been completed.

From the Croton reservoir the aqueduct will be continued south to Kensico reservoir, which will be enlarged to include Rye Pond and will form an auxiliary storage reservoir at an elevation of 355 feet above mean tide,

capable of containing 25 billion gallons, or sufficient to supply the city at the rate of 500 million gallons per day for a period of fifty days. About 4 m. s. of Kensico, at Scarsdale, there will be built a large filtering plant, and at Hillview, 6 m. to the s. of this, will be another storage reservoir. With these two auxiliaries or emergency reservoirs provided, the city will be secured against any sudden interruption of its supply through failure of the 69 m. of aqueduct lying to the n. of them. By the construction of a tunnel of 200 million gallons daily capacity below the East river, Brooklyn and Staten Island will be provided with a supply of 100 million gallons daily, and this aqueduct will terminate in a large reservoir to be constructed in Forest Park. From the point where this tunnel reaches the shores of Long Island, a line of 20 million gallons capacity will be built through Brooklyn and below the Narrows for the supply of Staten Island. Consult: Bursall, *Earth Dams* (New York, 1900); Frizzell, *Water-Power* (New York, 1901); Schuyler, *Reservoirs for Irrigation, Water-Power and Domestic Supply* (New York, 1901); *The Manual of American Water-Works;* Wilson, *Manual of Irrigation Engineering* (New York, 1897); Wegmann, *Design and Construction of Dams* (New York, 1899).

RESET, v. *rē-sĕt'* [OF. *receete, recepte,* something received (see RECEIPT)]: in *Scotch law,* to receive stolen goods: N. the offense of receiving and keeping stolen goods. RESET'TER, n. *-tėr,* one who receives stolen goods.

RESET, v. *rē-sĕt'* [*re,* again, and *set*]: to set again, as a diamond; among *printers,* to set over again.

RESETTLE, v. *rē'sĕt'l* [*re,* again, and *settle*]: to settle again. RESET'TLEMENT, n. a second or new settlement.

RESHAPE, v. *rē-shāp'* [*re,* again, and *shape*]: to shape again.

RESHD: See RASHT.

RESHID' PASHA' (MUS'TAPHA MEH'EMED). See REDSHID PASHA.

RESHIP, v. *rē-shĭp'* [*re,* again, and *ship*]: to ship a second time; to ship again for another place what has been imported. RESHIP'MENT, n. the act of shipping again; goods reloaded and sent to another port.

RESHT, *rĕsht:* Persia, capital of the province of Ghilan, 150 m. n.w. of Teheran, near the Caspian Sea, and with a port at Enzeli. On the highway of commerce and travel between Europe and Persia, its geographical position has a special significance. There is an extensive manufacture and trade in silk. Pop. about 40,000.

RESIANT, a. *rĕz'ĭ-ănt* [Norm. F. *resсant,* dwelling—from mid. L. *resĭans,* dwelling in a place: L. *res'ĭdens* or *resĭden'tem,* residing (see RESIDE)]: in *OE.,* resident; present in a place. RES'IANCE, n. *ĭ-ăns,* in *OE.,* residence; dwelling; abode.

RESIDE, v. *rĕ-zīd′* [F. *résider*—from L. *residērĕ*, to remain, to abide—from *re*, again; *sedĕō*, I sit: It. *risedere*]: to continue in a place as an inhabitant; to abide; to live; to dwell. RESID′ING, imp. RESID′ED, pp. RESID′ER, n. *-ėr*, one who resides in a particular place. RESIDENT, a. *rĕz′ĭ-dĕnt* [F.—from L. *res′ĭdens* or *resĭden′tem*, remaining, abiding]: dwelling or abiding in a place: N. one who resides or dwells in a place; an inhabitant; a public minister residing at a foreign court. RES′IDENCE, n. *-dĕns* [F.—L.]: act of residing; place where one resides; home; an abode; a mansion; also RES′IDENCY, n. *-dĕn-sĭ*, an abode; the official dwelling of a government officer in India. RES′IDEN′TIAL, a. *-dĕn′shăl*, having actual possession; related or pertaining to residence or residents. RES′IDEN′TIARY, a. *-shėr-ĭ*, residential: N. one who keeps a certain residence, as the canon of a cathedral.—SYN. of 'reside': to remain; live; dwell; abide; domicile; inhabit; sojourn; domiciliate; stay; house.

RESIDUE, n. *rĕz′ĭ-dū* [F. *résidu*—from L. *resid′ŭŭm*,, a remainder—from *re*, back; *sedĕō*, I sit: It. *residuo*]: that which remains after the greater part has been taken or separated; the rest; the remainder; the remainder of an estate after payment of debts and legacies. RESIDUAL, a. *rĕ-zĭd′ū-ăl*, remaining after the greater part has been taken. RESID′UARY, a. *-ėr-ĭ*, pertaining to the residue; that takes the residue or remainder of an estate after paying debts and legacies; entitled to the residue, as a *residuary legatee:* if the debts and the express legacies exhaust all the funds, the residuary legacy is worth nothing. RESID′UUM, n. *-ŭm*, the residue; the remainder: plu. RESID′UA, *-ă*.—SYN. of 'residue': remainder; rest; remnant; balance.

RESIGN, v. *rē-sīn′* [*re*, again, and *sign*]: to sign again.

RESIGN, v. *rĕ-zīn′* [F. *résigner*—from L. *resignārĕ*, to resign—from *re*, back; *signārĕ*, to mark, to sign—from *signum*, a mark: It. *risegnare*]: to give up, as a claim or an office; to yield into the hands of another; to submit without resistance or murmuring; to yield, as the will; to submit; to quit; to forsake. RESIGN′ING, imp. RESIGNED′, pp. *-zīnd′:* ADJ. calmly submitting to the will of God. RESIGN′EDLY, ad. *-ĕd-lĭ*. RESIGN′ER, n. *-ėr*, one who resigns. RESIGNATION, n. *rĕz′ĭg-nā′shŭn* [F.—L.]: the act of yielding or giving up; habitual submission to the will of God; submission; patience.—SYN. of 'resign': to surrender; abdicate; relinquish; submit; leave; quit; forsake; forego; renounce; abandon;—of 'resignation': endurance; patience; fortitude; acquiescence; surrender; submission; relinquishment; renunciation; abdication; abandonment.

RESILE, v. *rĕ-zīl′* [F. *résilier*, to cancel—from L. *resilīrĕ*, to leap or spring back—from *re*, back; *salĭō*, I leap or spring]: to start back; to cancel; to withdraw from, as an agreement. RESIL′ING, imp. RESILED′, pp. *-zīld′*. RESILIENT, a. *rĕ-zĭl′i-ĕnt*, leaping or starting back; rebounding. RESIL′IENCE, *-ĕns*, the act of springing back or rebounding; also RESIL′IENCY, n. *-ĕn-sĭ*.

RESIN, n. *rĕz′ĭn* [F. *résine*, rosin—from L. *rēsīna*; Gr. *rhētīnē*, resin: It. *resina*]: brittle substance which exudes from many trees, especially from firs and pines, usually of yellowish or amber color, more or less transparent; the commonest *resin*, forming the remains of the still after distilling turpentine, is usually called *rosin* (see RESINS). RESINATE, n. *rĕz′ĭn-āt*, general name for the salts of the acids obtained from turpentine—viz., the sylvates, the pinates, and the pimarates. Their general formulæ are $C_{20}H_{29}MO_2$ and $C_{40}H_{58}MO_4$. RES′INY, a. *-ĭ*, partaking of the qualities of resin. RES′INOUS, a. *-ŭs*, containing or yielding resin; possessing the properties of resin. RES′INOUSLY, ad. *-lĭ*. RES′INOUSNESS, n. *-nĕs*, the quality of being resinous. MINERAL RESINS, pitchy or resinous substances, as asphalt, amber, retinite, etc. RESINOUS ELECTRICITY, electricity which is excited by rubbing bodies of the resinous kind—called also *negative*, and opposed to *vitreous* or *positive electricity*. RES′INO-ELEC′TRIC, a. exhibiting negative electricity. RES′INIF′EROUS, a. *-ĭf′ĕr-ŭs* [L. *fero*, I produce]: producing resin. RES′INIFORM, a. *-ĭ-fawrm* [L. *forma*, shape]: having the form of resin.

RESINA, *rā-sē′nâ*: town of s. Italy, province of Naples, at the foot of Vesuvius, and facing the sea. R. is built on the site of ancient Herculaneum. Exquisite fruits are grown, and the famous *Lacrimæ Christi* wine is made in the vicinity. It is surrounded by country houses, and is a place of recreation for the Neapolitans, on account of its salubrity. The ascent of Mount Vesuvius is begun at R.—Pop. 13,626.

RESINITE, n. *rĕz′ĭn-īt*: see RETINITE.

RES′INS: class of natural vegetable products composed of carbon, hydrogen, and oxygen. They are closely allied to the essential oils, all of which, when exposed to the air, absorb oxygen, and finally become converted into substances having the characters of resin; and in most cases they are obtained from the plants which yield them, mixed with and dissolved in a corresponding essential oil. Like the natural oils, the natural resins are usually mixtures of two or more distinct resins, which admit of separation by their unequal solubility in different fluids.

The following are the general characters of this class of compounds. At ordinary temperatures, they are solid, translucent, and mostly colored, though some are colorless and transparent. Some are devoid of odor, while others give an aromatic fragrance from the admixture of an essential oil. In their crude state, they

never crystallize, but are amorphous and brittle, breaking with conchoidal fracture; when pure, several of them may be obtained in crystalline form. They are readily melted by heat, and are inflammable, burning with white, smoky flame. They are usually described as non-volatile, but it has been shown that common resin may be distilled in a current of superheated steam. They are insoluble in water; but dissolve in alcohol, ether, and the essential and fixed oils. They are insulators or non-conductors of electricity, and become negatively electric by friction. Many possess acid properties, in which case their alcoholic solutions redden litmus. These R. combine with the alkalies, and form frothy soap-like solutions in alkaline lyes. The resinous soaps thus formed differ from ordinary soap in not being precipitated by chloride of sodium.

The R. are divisible into the *hard resins*, the *soft resins*, and the *gum resins*.—The hard R. are at ordinary temperatures solid and brittle; they are easily pulverized, and contain little or no essential oil. Under this head are included copal, the varieties of lac, mastic, and sandarac, and the R. of benzoin (commonly called gum benzoin), jalap, guaiacum, etc.—The soft R. admit of being molded by the hand, and some are viscous and semi-fluid, and are termed *balsams*. They consist essentially of solutions of hard R. in essential oils, or admixtures of the two. They become oxidized and hardened by exposure to the air into the first class of R. Under this head are placed turpentine, storax, balsam of copaiba, and the balsams of Canada, Peru, and Tolu. —The gum R. are the milky juices of certain plants solidified by exposure to the air. They consist of a mixture of R. and essential oils with considerable proportion of gum; and on this account, when rubbed up with water, they yield a turbid or milky fluid from the dissolved gum, retaining the resin and oil in suspension, and are only partly soluble in alcohol. Some of them, e.g., ammoniacum, asafetida, euphorbium, galbanum, gamboge, myrrh, olibanum, etc., are valuable medicinal agents; while others, e.g., caoutchouc (or India-rubber) and gutta-percha, are of great value in the arts and manufactures.

The R. are very widely diffused throughout the vegetable kingdom; but certain families of plants are especially rich in them. They are obtained usually by making incisions into the wood of the trees which produce them; but sometimes they exude spontaneously, and in other cases they must be extracted from the wood by boiling alcohol. The crude R. are separated from the essential oils with which they are usually mixed by distillation with water, the resin remaining while the oil and water pass off; and from the gummy and mucilaginous matters by alcohol, which dissolves out the pure R., which can be precipitated from their alcoholic solution by addition of water. The R. are extensively used in medicine; and in addition to the almost innumerable applications

of caoutchouc and gutta-percha, various R. are of service in preparation of varnishes, soaps, pigments, artificial light (resin-gas), etc.

Various fossil R. are known, of which the most important is amber. Some chemists place bitumen and asphalt among this class; and among the fossil R. described by mineralogists are Fichtelite, Hartite, Idrialite, Ozocerite, Scheererite, Xyloretin, etc.

The common resin, or rosin, of commerce exudes in semi-fluid state from several species of pine, especially *Pinus tæda*, *P. mitis*, *P. palustris*, and *P. rigida* of N. America, *P. pinaster*, *P. pinea*, and *P. Laricio* of s. Europe, and *P. sylvestris* of n. Europe. The process of collecting it is simple: a longitudinal slice of the bark and wood

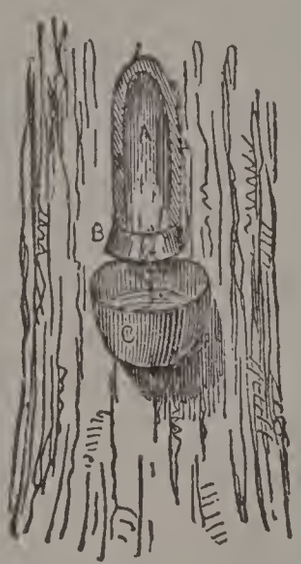


Fig. 1.

Fig. 2.

(A, fig. 1), about a ft. in length, is taken off by means of an ax with a curved blade (fig. 2); and at the bottom of the groove thus made, a small piece of bent wood or thin metal, as tin or zinc, is driven into a curved cut, made by one blow of the ax (B, fig. 1); this forms a sort of spout, which catches the liquid resin as it runs from the wound, and guides it into a small pot, made of common clay burned. At certain periods, these pots are emptied, and their contents put into casks, for transport to the distilleries, where the volatile essential oil is removed from the resin. The resin thus procured is much used in manufacture of common yellow soap, also for sizing paper and various other purposes, including preparation of ointments and plasters in pharmacy.

The other R. most generally known and used in America and Europe are Anime (q.v.), Copal (q.v.), Dammar (q.v.), Mastic (q.v.), Sandarac (q.v.), Frankincense (q.v.), Lac (q.v.). In addition, many are of essential service in other countries; as the Piney Resin or Dhoop, from *Vateria indica;* Black Dammar, from *Canarium strictum;* Saul Resin, or Dammar Batu, from *Shorea*

robusta—all serving many useful purposes in India, China, Japan, and other Asiatic countries.

RESIST, v. *rĕ-zĭst'* [F. *résister*—from L. *resistĕrĕ*, to resist, to oppose—from *re*, back or again; *sisto*, I stand: It. *resistere*]: to act in opposition to; to strive or act again; to withstand; to make opposition: N. a sort of paste or mixture to preserve portions of white color in print-dyeing. RESIST'ING, imp. RESIST'ED, pp. RESIST'IBLE, a. *-ĭ-bl*, that may be resisted. RESIST'IBLY, ad. *-blĭ*. RESIST'IBLENESS, n. *-bl-nĕs*, or RESIST'IBIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being resistible. RESIST'ANCE, n. *-ăns* [F.—L.]: opposition; hindrance; quality of not yielding to force; the powers by which motion in a body is diminished or destroyed. RESIST'ANT, a. *-ănt* [F.—L.]: making resistance: N. one who or that which resists. RESIST'LESS, a. *-lĕs*, that cannot be effectually opposed or resisted. RESIST'LESSLY, ad. *-lĭ*. RESIST'LESSNESS, n. *-nĕs*, the state of being resistless.—SYN. of 'resist': to oppose; withstand; thwart; hinder; check; baffle; disappoint.

RESISTANCE, ELECTRIC: the property of conducting substances by virtue of which they obstruct or oppose the passage of an electric current. Usually measured in ohms. The opposite or inverse of conductance.

RESISTANCE OF FLUIDS. See HYDROSTATICS; ATMOSPHERE.

RES JUDICATA, *rēz jū-dĭ-kā'tâ*, in Law: the subject-matter of an action already decided by a court of competent jurisdiction: in such case, a plea setting up the *res judicata* is sufficient defense; but the suit in the former case must have been between the same parties.

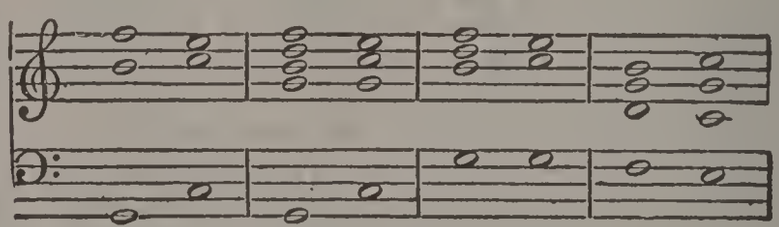
RESOLUBLE, a. *rĕz'ō-lô-bl* [*re*, back or again, and *soluble:* F. *résoluble*—from mid. L. *resolu'bĭlis*, resolvable—from L. *resolvĕrĕ*, to resolve (see RESOLVE)]: that may be be melted or dissolved.

RESOLUTE, a. *rez'ō-lôt* [Sp. *resoluto;* It. *risoluto;* F. *résolu*, resolute, bold—from L. *re*, back; *solūtus*, loosed; *solvĕrĕ*, to loose]: determined; decided; characterized by firmness and constancy in pursuing a purpose; undaunted. RES'OLUTELY, ad. *-lĭ*, firmly; constantly; steadily. RES'OLUTENESS, n. *-nĕs*, the quality of being resolute in a fixed purpose; unshaken firmness.—SYN. of 'resolute': determined; decided; steady; steadfast; fixed firm; bold; unshaken; persevering; constant.

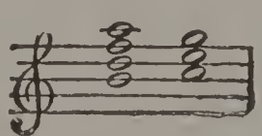
RESOLUTION, n. *rĕz'ō-lô'shŭn* [F. *résolution*—from mid. L. *resolutĭōnem* (see RESOLUTE)]: fixed determination; steadiness or fixedness of purpose; constancy in execution; firmness; a formal proposition brought before a public body for discussion and adoption. RESOLU'TIONER, n. *ĕr*, one who joins in the declaration of others; one of a party of the Church of Scotland in the 17th c. —SYN. of 'resolution': decision; firmness; resolvedness; fortitude; steadfastness; purpose; resolve; perseverance; boldness.

RESOLUTION, n. *rĕz′ō-lō′shŭn* [L. *resŏlūtus*, enervated, relaxed—from *re*, back; *solūtus*, loosed; *solvĕrĕ*, to loose]: the act or process of disentangling or overcoming difficulties; the process of separating the component parts of bodies; analysis; in *med.*, the dispersion or disappearance of a tumor or inflammatory part; in *math.*, solution; in *dyn.*, the estimation of the various forces acting together at one point; a term frequently used as the opposite of COMPOSITION—as, *the resolution and composition of forces* (see COMPOSITION): in *music* (see below). *Note.*—The two preceding titles are identical in their etymology. RESOLUTION, 'fixed determination,' signifies primarily, 'the state of being let loose or free from restraint.'—SYN.: separation; analysis; dissolution; disentanglement.

RESOLU′TION, in Music: the passing from a discord into a concord; descent by a tone or a semitone of the discord heard in the preceding harmony, as the mode requires. In the progression of chords in a musical composition, there are certain chords that require to be followed by certain others, or, as it is called, *resolved* into them; otherwise, a sense of incompleteness is left on the ear. Thus the chord of the dominant seventh must be resolved by the tonic harmony, the major third ascending a semitone to the key-note, and the seventh descending one degree to the third of the key:



The diminished triad is similarly resolved, and all chords immediately derived from the dominant harmony. The chord of the added ninth is resolved by descending a second to the fifth of the tonic:



RESOLUTION ISLAND: the name of several islands, the principal one being in British North America, at the extreme end of Hudson Strait; lat. 61° 39′ N.; long. 65° W. The island is about 40 miles in length and breadth, and Cape Resolution is on the east side. Resolution Island, in Dangerous Archipelago, Pacific Ocean, is in lat. 17° 22′ S.; long. 141° 35′ W. Resolution, a lagoon island in Low Archipelago, is in lat. 17° 25′ S.; long. 143° 24′ W.

RESOLUTIONS OF '98: the designation commonly given to the Kentucky and Virginia resolutions of 1798, defining the relations between the State and Federal governments, and protesting against certain acts of Congress as unconstitutional, and as violating the rights reserved to the States. The Resolutions offered in the Kentucky legislature, and adopted by that body, were drafted by Thomas Jefferson.

The first Resolution declared that the Federal Constitution was a compact between the States, by which a general government was created for special purposes, and that, 'as in other cases of compact between parties having no common judge, each party has an equal right to judge for itself, as well of infractions as of the mode and measure of redress.' The Alien and Sedition and other laws were pronounced 'not law, but altogether void and of no force,' and one of the Resolutions postponed to 'a time of greater tranquillity' the 'revisal and correction' of other acts of Congress alleged to be unconstitutional.

The eighth Resolution directed the appointment of a committee of correspondence, to communicate the Resolutions to the several States, and to inform them that the State of Kentucky was determined 'to submit to undelegated and consequently unlimited powers in no man or body of men on earth; that in the case of an abuse of the delegated powers, the members of the general government being chosen by the people, a change by the people would be the constitutional remedy; but when powers are assumed which have not been delegated, a nullification of the act is the right remedy; and that every State has a natural right, in cases not within the compact, to nullify of their own authority all assumptions of power by others within their limits.' The Committee of Correspondence was instructed to request the other States 'to concur in declaring those acts void and of no force, and each to take measures of its own for providing that neither these acts, nor any other of the general government, not plainly and intentionally authorized by the Constitution, shall be exercised within their respective territories.'

The Resolutions passed the Kentucky legislature, Nov. 14, 1798, with only two or three dissenting votes, and similar Resolutions, drafted by James Madison, were adopted by the Virginia legislature, Dec. 24, 1798, by a vote of 100 to 63 in the House of Delegates, and 14 to 3 in the Senate.

RESOLVE, v. *rĕ-zŏlv′* [L. *resolvĕrĕ*, to separate, to unfasten—from *re*, back; *solvo*, I loose: It. *risolvere*]: to reduce to simple parts or first principles; to analyze; to clear of difficulties; to explain; to determine in one's own mind; to fix in a determination; to decide; to purpose; to constitute by vote or formal declaration; in *med.*, to disperse or scatter, as a tumor; in *OE.*, to inform; to free from difficulty or doubt; to settle in an opinion: N. fixed purpose of mind; determination. RESOLV′ING, imp. RESOLVED′, pp. *-zŏlvd′*: ADJ. fixed or determined in purpose. RESOLV′ER, n. *-ėr*, one who resolves. RESOLV′ABLE, a. *-ă-bl*, capable of being resolved; that may be reduced to first principles. RESOLV′ABIL′ITY, n. *-bĭl′ĭ-tĭ*, capability of being resolved. RESOLV′EDLY, ad. *-ĕd-lĭ*. RESOLV′EDNESS, *-nĕs*, fixedness of purpose; firmness. RESOLV′ENT, a. *-ĕnt*, in *med.*, having the power to dissolve or scatter, as a tumor: N. a medicine which dissolves a tumor. TO RESOLVE A NEBULA, in *astron.*, to cause a nebula by a powerful instrument to appear separated into distinct stars.—SYN. of 'resolve, v.': to analyze; explain; solve; disentangle; unravel; conclude; purpose; decide; determine; fix; confirm; melt; dissolve; disperse; reduce; constitute; form; decree.

RESONANT, a. *rĕz′ŏ-nănt* [F. *résonnant*, resounding—from L. *rĕsŏnans* or *rĕsŏnan′tem*, resounding or re-echoing—from *re*, back; *sono*, I sound: It. *risonante*, resounding]: returning sound; echoing back. RES′ONANTLY, ad. *-lĭ*. RES′ONANCE, n. *-năns*, the returning or prolongation of sound, as by the air acting on the bodies of stringed instruments. RESONATOR, n. *rĕz′ŏ-nāt-ėr*, instrument invented by Helmholz for facilitating analysis of compound sounds. When fitted to one ear, the other being stopped, tones above or below the pitch of the resonator will be imperfectly heard: but a note corresponding to the peculiar note of the resonator will be intensified.

RESORCIN, *rĕz-awr′sĭn* [*resin*, and *orcin*: crystalline chemical compound, formulæ $C_6H_6O_2$ or $C_6H_4(OH)_2$. It is homologous with orcin, $C_7H_8O_2$, hence its name. R. is produced by the action of potassium hydrate on various resins, especially ammoniacum, and also synthetically. It is in triclinic crystals, colorless, but becoming pinkish on exposure to air, very soluble in water. R. is a valuable antiseptic; irritant only in strong solutions applied to mucous membranes or abrasions.

RESORT, v. *rĕ-zŏrt′* [F. *ressortir*, to go forth again—from *re*, again; *sortir*, to go out: mid. L. *resortīrĕ*, to be subject to a tribunal, to appeal—from L. *re*, again; *sors* or *sortem*, a lot: also referred to L. *re*, again; *surgĕrĕ*, to rise]: to repair; to apply; to betake one's self; to have recourse; to frequent; in *OE.*, to fall back: N. act of resorting; a place much frequented; concourse. RESORT′ING, imp. RESORT′ED, pp. RESORT′ER, n. *-ėr*, one who resorts. LAST RESORT, final tribunal; that from which there is no appeal; final means.

RESOUND, v. *rē-sownd'* [*re*, again, and *sound*]: to sound again.

RESOUND, v. *rĕ-zownd'* [L. *resŏnārĕ*, to resound—from *re*, back or again; *sonārĕ*, to sound: It. *risonare:* F. *résonner*]: to send back sound; to echo; to reverberate; to praise or celebrate by the sound of the voice or an instrument; to spread the fame of; to be sent back, as sound; to be much and loudly praised: N. the return of sound; an echo. RESOUND'ING, imp.: N. the act of sounding back. RESOUND'ED, pp.

RESOURCE, n. *rĕ-sōrs'* [F. *ressource*, resource—from L. *re*, again; *surgĕrĕ*, to rise (see SOURCE)]: any source of aid or support; any person or object which may be resorted to for assistance, safety, or supply; an expedient; a contrivance. RESOURC'ES, n. plu. *-ĕz*, available means; property; funds. RESOURCE'LESS, a. *-lĕs*, destitute of resources.—SYN. of 'resource': expedient; device; contrivance; means; resort.

RESPECT, v. *rĕ-spĕkt'* [F. *respecter*, to respect—from L. *respectārĕ*, to look back, to respect; *respectus*, respect, regard—from *re*, back or again; *specto*, *specĭō*, I look at, I behold: It. *rispettare*]: to regard; to view or consider with some degree of reverence; to esteem for worth or superiority: N. that estimation or honor in which men hold the good qualities of others; deference; partial regard; undue bias; in *Scrip.*, good-will or favor; in *OE.*, regard; attention; reverend character; consideration; motive. RESPECTS', n. plu. *-spĕkts'*, deferential good wishes; complimentary regards. RESPECT'ING, imp. RESPECT'ED, pp. RESPECT'ER, n. *-er*, one who respects. RESPECTING, prep. *rĕ-spĕkt'ĭng*, with relation or regard to; regarding. RESPECT'LESS, a. *-lĕs*, having no respect; without regard. RESPECT'ABLE, a. *-ă-bl* [F.—L.]: deserving respect; worthy of esteem and honor; moderately excellent; not mean; ordinary. RESPECT'ABLY, ad. *-blĭ*. RESPECT'ABIL'ITY, n. *-bĭl'ĭ-tĭ*, the state of being respectable; the qualities in character which command respect. RESPECTFUL, a. *-fûl*, marked by outward civility; deferential; courteous; civil. RESPECT'FULLY, ad. *-lĭ*. RESPECTFUL'NESS, n. *-nĕs*, the quality of being respectful. RESPECTIVE, a. *rĕ-spĕkt'ĭv*, having relation to a particular person or thing; not absolute; belonging to each, as their *respective* abodes; in *OE.*, worthy of reverence. RESPECTING, or RESPECT'ANT, in *her.*, position of two animals borne face to face; but beasts of prey rampant when so borne are said to be *rampant combatant*. RESPECT'IVELY, ad. *-lĭ*, as each belongs to each; particularly; relatively; not absolutely; in *OE.*, partially; with great reverence. IN RESPECT OF, or IN RESPECT TO, in relation to; with regard to.—SYN. of 'respect, v.': to esteem; honor; revere; venerate; regard;—of 'respect, n.': consideration; estimation; deference; attention; regard.

RESPIRATION.

RESPIRATION: act of inhalation and exhalation. Its object, its organs, and its process, are here to be considered. The two great objects of respiration or breathing are: first, introduction into the system of oxygen, by which the products resulting from the disintegration or breaking up of the muscular, nervous, and other tissues of the body are converted into compounds easily eliminated or removed by the excreting organs (as the kidneys, lungs, skin, etc.); and, secondly, removal of the most noxious and, consequently, the most important of these products, carbonic acid, through special respiratory organs, which, in most air-breathing animals, except insects, are lungs; while in water-breathing animals, excepting those very low in the scale of organization, they take the form of *branchiæ* or gills. In all the vertebrated animals, excepting in fishes, and in the amphibians during their young state, the respiratory organs are more or less complicated internal air-sacs, communicating through the throat with the external atmosphere. The simplest known form in which the LUNGS or internal air-sacs exist is as a pair of elastic membranous bags close beneath the vertebral column, communicating with the surrounding atmosphere by a tube known as the windpipe, or *trachea,* which opens through the larynx, or organ of voice, into the throat. These bags are lined by a delicate, thin, and moist membrane, called a mucous membrane, embedded in and partly beneath which is a vascular network, through which all the blood in the animal's body is in turn driven by the heart. The moist partition between the blood in this network and the air in the interior of the lungs is so thin that it permits of the passage of oxygen into the moving current of the blood, while carbonic acid simultaneously passes in an opposite direction from the blood into the air. To complete the apparatus, there are certain muscles under whose action the bags are emptied of their vitiated contents, and refilled with pure air. Such are the respiratory organs as they occur in that remarkable animal, the *Proteus anguinus,* found in the dark caves of Carinthia, and belong to the order *Amphipneusta,* referred to above. In the more highly organized animals and in man, we find these elementary essential parts complicated and modified in great variety of ways. Confining our present view to the respiratory process in man and mammals, we may consider the anatomical details under three different heads. *First,* There must be a special respiratory organ—the lungs—affording by its internal arrangement an immense extent of internal surface, covered by vascular network, through which the blood flows in innumerable minute streamlets, separated by only an extremely thin membrane from the atmospheric air that has been inhaled; *secondly,* there must be such an arrangement of the circulating system that fresh blood may be perpetually driven from

the right side of the heart through the lungs, and onward to the left side of the heart; *thirdly,* there must be arrangements for the frequent and regular change of the air contained in the lungs. These three points will be considered in the above order.

A sufficiently large internal aërating surface might of course be obtained by increasing the size of the air-bags themselves, but this would involve an increase of size in the animal. In examining the lungs of different animals, two plans are observed for increasing the internal surface without increasing the total bulk of the lungs. According to one plan, the internal surface is, as it were, molded into cells, separated laterally by partitions, somewhat like the cells seen in a section of honeycomb, or more like the appearance presented by the second or honeycomb stomach of ruminating animals; according to the other plan enormous multitudes of little lung-sacs partitioned, as will be presently shown, in their interior, are clustered round the ultimate branch of a common air-tube, which communicates with all of them. If we can conceive a bunch of grapes with its stem and all its minute branches, and the grapes attached to the ends of these branches completely hollow, we get a good idea of this second plan, except so far as the partitioning of the terminal cells (the grapes in the illustration) is concerned. By the former method, which occurs in amphibians and reptiles, the lung-sacs are merely rendered more cellular in their interior; while, by the latter plan, compound lungs are formed, as in birds, and in mammals, including man. Hence these two varieties of lung-structure correspond to the so-called cold-blooded and warm-blooded animals respectively. In fig. 1, representing a section of the lungs of the frog (magnified), and in fig. 5 under REPTILES, representing a section of the lungs of a turtle (diminished), we have illustrations of the first plan (the cellular lung-sac); while in figs. 2 and 3 we have diagrammatic illustrations of the human lung. Fig. 2 is a shaded diagram (copied from Marshall's series of *Physiological Diagrams*), to show the ramifications of the air-tubes in the human lungs. L is an outline representing the left lung; T the main air-tube—called the windpipe or *trachea* (so called from the Greek word *tracheia,* rough, and similarly termed in Latin the *Arteria aspera,* though not an artery as we now employ the word)—descends through the neck from the larynx or organ of voice into the chest; B shows the right and left *bronchi,* or primary divisions into which the windpipe separates, one for each lung. Each

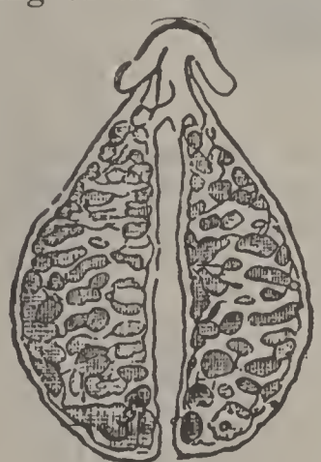


Fig. 1.

bronchus enters the lung at the so-called root, and divides and subdivides into smaller branches, which never coalesce, but continue separate, like the branches and twigs of a tree. These are the *bronchial tubes.* The

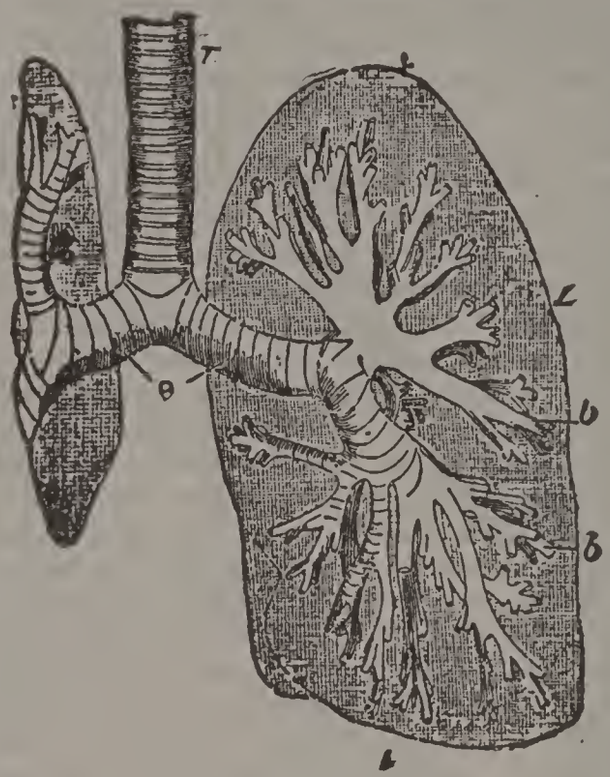


Fig. 2.

smallest shown in this diagram, *b*, *b*, undergo many further subdivisions, until at length they form an immense number of minute tubes, not more than 1/70 of an inch in diameter, each of which opens into a small membranous sac, having a cellular internal surface very similar to that of the frog's lung. In fig. 3 (also from Marshall's diagrams), there is a representation, magnified about 100 diameters, of three of these clusters of cells, or little lung-sacs, from the human lung. In this figure, *b* is a small air-tube, or bronchial tube, from which several of the finest or ultimate tubes proceed; *c* shows the outer surface of one of the lung-sacs, or *lobules* as they are commonly termed; *d*, the inner surface of another, which has been cut open to show the ultimate recesses of the lung to which the air has access—viz., the *air-cells.* According to Rossignol, the ultimate bronchial ramifications terminate in a shape resembling that of an inverted funnel, and hence he applies the term, *infundibula* to these

Fig. 3.

endings. It is on the inner surface of these air-cells that the network of minute capillaries is spread in which the act of aëration takes place. Each lobule receives air through its own bronchial tube alone, and consequently there is no direct communication between the air-cells of adjacent lobules. These lobules are closely compressed on one another; and collectively, together with the connective tissue which unites them to one another, make up the great mass of the lungs. To such an extent is the process of subdivision carried out, that, according to calculation, the lungs of an adult man contain at least 600 millions of these air-cells. It is because of the air included in these cells that the pulmonary tissue has a soft spongy feel, and crackles when compressed between the fingers; and for the same reason, the lungs, and even small portions of them, even after strong pressure, float in water, it being extremely difficult to drive all the air out of the cells. The lungs (except in the fetal state, when no air enters them) are thus the lightest organs, in relation to their size, in the body. Although their bulk is so great that, with the heart, they occupy almost the whole cavity of the chest, they weigh only about $3\frac{1}{2}$ lbs. in men, and $2\frac{3}{4}$ lbs. in women. Their color varies at different ages; at birth, they are of pinkish white tint; in adult life, of slate color, with mottled appearance; and in old age, they become of still darker tint. The polygonal markings seen on the surface correspond to the outer surface of the lobules above noticed. Their shape is adapted to that of the cavity in which they are lodged, each lung being conical in form, with its apex rising into the neck; while its base, broad and concave, rests on the convex surface of the diaphragm, and between the two lungs lie the heart and the great vessels that proceed from it. During life the inner margins of the lungs nearly overlap the heart, leaving only a roundish space, less than two inches in diameter, of that organ uncovered, while their lower borders extend to the cartilages of the ribs, and fit into the angle formed between those cartilages and the diaphragm. Each lung is invested by its own serous membrane, the PLEURA (q.v.), which serves the double purpose of facilitating the movements which the lungs undergo in the act of respiration, and of suspending each lung in its proper position. In the latter function, the pleuræ are essentially assisted by the great air-tubes and blood-vessels, which collectively form what are termed the roots of the lungs.

The structure of the air-tubes and the lungs themselves next require consideration. Beginning with the upper portion, we have to consider the *trachea*, or windpipe, which in the human subject descends in the middle line from the Larynx (q.v.) to the level of the third dorsal vertebra, where it divides into the right and left bronchi (fig. 2). It is kept permanently open by 16 to 20 cartilaginous rings, which surround two-thirds of the

tube, and are incomplete behind, where the tube is completed by a fibrous membrane in which are numerous tracheal glands together with unstriped muscular fibre, to which the term *trachealis* muscle has been given. The trachea measures about 4½ inches in length, and is about three-quarters of an inch wide. Its mucous membrane is continuous through the glottis with that of the pharynx or throat, and is covered with ciliated columnar Epithelium. Of the bronchi, the right is wider, shorter, and more horizontal than the left. Their walls are composed on the same plan as those of the trachea, but become thinner as they approach the air-cells. The cartilaginous portions which, in the primary divisons of each bronchus, partially retained the annular form, become gradually reduced to mere flakes, and finally cease in tubes of ⅛ or 1/10 of an inch in diameter. The unstriped muscular fibres occurring in the trachea are continued downward

Fig. 4.

Diagrams (by Hutchinson) showing the extent of antero-posterior movement in ordinary and in forced respiration in male and female. The back is supposed to be fixed, in order to throw forward the movement as much as possible. The black line indicates, by its two margins, the limits of *ordinary inspiration* and *expiration*. In *forced inspiration*, the body comes up to the dotted line, while in *forced expiration* it recedes to the smallest space indicated.

to the minutest tubes, forming a very thin layer, completely surrounding the canal, and the ciliated epithelium extends equally far. The terminal bronchial tube loses its ciliated epithelium at about ⅛ of an inch from the air-cell consisting then of squamous epithelium only.

RESPIRATION.

The mode in which the blood is perpetually changed in the lungs next demands consideration. The venous or impure blood collected from all parts of the body in the right side of the heart, is conveyed to the lungs by the pulmonary artery, which is about the size of the aorta, and, like that vessel, is furnished with three semilunar valves at its origin, which prevent the blood from regurgitating into the right ventricle of the heart (see CIRCULATION). The pulmonary artery divides, before entering the lungs, into a right and a left branch, which ramify as far as the lobules in company with the bronchial tubes. At this point, they distribute themselves on the outside of the lobules, in the so-called *interlobular fissures*, and penetrating between the air-cells, form a capillary network on and in the walls of the cells and of the lobular passages. This network empties its blood, which is now aërated, iuto minute venous radicles, which converge to form larger veins, and these finally form the four pulmonary veins, which discharge their arterialized blood into the left side of the heart. The capillary wall is thus exposed and bare, in contact with the air of the cell, and nothing besides the delicate membrane of the capillary intervenes between the air and the blood.

In addition to the pulmonary artery and pulmonary veins, which convey the blood to and from the lungs for the purpose of aëration, there are other vessels, known as the bronchial vessels, for the nutrition of the lung itself. The lungs are supplied with nerves from the anterior and posterior pulmonary plexuses, lying at the root of the organ, and composed of filaments of the pneumogastric and sympathetic nerves. The filaments from these plexuses accompany the bronchial tubes, in which they are finally lost. The chest (or thorax) is so constructed as to be capable of enlargement in height, in depth, and in width. Its height is increased mainly by the descent of the diaphragm, and to a certain extent by the elevation of the ribs, and the widening of the intercostal spaces; while its depth and width are increased by the elevation of the ribs, which carry forward and elevate the breast-bone, or sternum, especially at its lowest end, and are slightly rotated on an imaginary axis, joining their extremities, by which their central portion is raised, and slightly removed from the mesial plane of the chest. It is only in forced or deep inspiration that all these means of enlarging the chest are called into play. An ordinary inspiration is attended in men with very slight elevation of the ribs, the diaphragm taking the chief part, the respiration being then called abdominal; in women the elevation is much greater, especially in the upper ribs, the respiration being called thoracic; the cause of this difference in the sexes probably lying in the narrower waist of the female, requiring a compensation in the upper part of the chest.

Every complete act of respiration is divisible into four

parts—1. Inspiration; 2. A short pause, not always observed; 3. Expiration; 4. A considerable pause, occupying about one-fifth of the whole time required for one complete respiratory act. The act of expiration is always more prolonged than that of inspiration, the former being to the latter in the ratio of 12:10 in adult males; and as 14:10 in children, women, and aged persons. The number of respiratory acts performed in a minute varies at different ages. According to Quetelet, at birth there are 44 respirations in one minute; at 5 years of age, 26; from 15 to 20 years, 20; from 20 to 25 years, 18.7; from 25 to 30 years, 16; from 30 to 50 years, 18.1; so that from 16 to 18 may be taken as the ordinary range for healthy adults. The average ratio which the number of respirations bears to the number of pulsations in a given time is about 1:4½, and if there is any great deviation from this ratio, there is probably some obstruction to the aëration of the blood, or some disorder of the nervous system. Thus, in pneumonia, in which a greater or less amount of pulmonary tissue is unfitted for its office, the number of respirations increases in a more rapid proportion than the number of pulsations, so that the ratio becomes as 1:3, or even as 1:2. In hysteria, a similar or even greater deviation from the normal ratio may occur. On the other hand, in certain typhoid conditions, and in narcotic poisoning, the respiratory acts are diminished in number; the ratio of respirations to pulsations being as 1:6, or even 1:8.

The muscular movements of respiration, though partly under the control of the will, are essentially 'automatic' in their nature. Their chief centres consist of two ganglia, corresponding to the origins of the pneumogastric nerves, which are the principal excitor nerves which convey the stimulus on which these movements are dependent; while from the adjacent parts of the medulla oblongata proceed the chief motor nerves by which they are carried into effect. There are other excitors than the pneumogastric (or vagus) nerve to the action of the respiratory muscles. Among these, the nerves distributed to the general surface, particularly to the face, probably perform an important part. Many familiar facts demonstrate the influence of the superficial nerves on the respiratory system. 'Every one,' to use Dr. Carpenter's words, 'knows that the first plunge into cold water, or the first descent of the stream of the shower-bath, or even the dashing of a glass of cold water in the face, will produce inspiratory efforts; and this fact has many important practical applications. Thus, in the treatment of asphyxia, whether congenital or the result of narcotic poisoning, drowning, etc., the alternate application of cold and heat is found to be one of the most efficacious means of restoring the respiratory movements.' The principal motor or efferent nerves concerned in bringing out the respiratory movements are the phrenic, going to

the diaphragm; the intercostal, supplying the intercostal muscles; the facial and the spinal accessory nerves; though, as above mentioned, the superficial nerves generally exert a motor or efferent action.

How far the respiratory movements are partly, but not entirely, under the control of the will. We can, with little inconvenience, suspend the respiratory actions for a minute or even longer if we have previously introduced into the lungs a full supply of fresh air; but if the suspension be further prolonged, the stimulus conveyed by the excitor nerves to the nervous centres becomes so strong, that by no effort of the will can we avoid making inspiratory efforts.

When the lungs have been emptied as much as possible of air by the most powerful expiratory effort, they still contain a quantity over which we have no control, to which the term *residual air* is applied. In addition to this residual air, physiologists distinguish, in connection with the respiratory process, *reserve air*, which is that portion which remains in the chest after an ordinary gentle expiration, but which may be displaced at will; *tidal air*, which is the volume displaced by the constant gentle inspiration and expiration; and *complemental air*, or the quantity which can be inhaled by the deepest possible inspiration, over and above that introduced in ordinary breathing. The greatest volume of air that can be drawn in and expelled by the most powerful respiratory movement, which is obviously the sum of the reserve, tidal, and complemental air, is designated as the *vital capacity*. In the case of a man of average height and chest development, the vital capacity is estimated at 3,300 c.c. (tidal air 300 c.c., reserve and complemental air, each 1,500 c.c.), and the amount of residual air, 2,000 c.c. The air within the lungs, therefore, is purified only by the process called *diffusion* (q.v.) *of gases*, and not by direct removal and replacement.

The *alterations* in the inspired air effected by respiration consist essentially in the removal of a portion of the oxygen, and its replacement by a nearly corresponding bulk of carbonic acid. The amount of carbonic acid in the expired air varies inversely with the number of respirations; it reaches 5.5 per cent (or more) when the respirations are only 6 in the minute, while it falls as low as about 2.6 per cent when the respirations are 96 in the minute. About 4.35 per cent of carbonic acid is, on an average, added to the air in ordinary respiration, while about 4.782 per cent of oxygen is removed; the actual diminution of bulk of the expired air (after the removal of the moisture obtained from the lungs) being about 1/45 of its volume. Hence, unless where there is free ventilation, the air in an apartment containing men or animals must soon become vitiated by containing a great excess of carbonic acid (for ordinary atmospheric air contains only about one part of carbonic acid in 2,500 parts), and a deficiency of oxygen. It has been

estimated that an adult man in a state of rest exhales in 24 hours an amount of carbonic acid equivalent to 7.144 oz. of carbon, and should be increased to 8.68 and 11.7 oz. for the non-laboring and laborious classes respectively, at their ordinary rate of exertion. The total amount of carbonic acid is greatly increased by external cold, and diminished by heat; that it is increased by a moist, and diminished by a dry atmosphere; that it increases in both sexes to about the 30th year, when it remains stationary for 15 years, after which it diminishes; that at all ages beyond 8 years it is greater in males than in females. in the exanthematous fevers (measles, small-pox, scarlatina, etc.), and in chlorosis; while it is diminished in typhus and in chronic diseases of the respiratory organs.

There has been much discussion with regard to the extent to which the nitrogen of the air is affected by respiration. Usually a small amount of this gas is given off, but the quantities absorbed and exhaled so nearly balance each other, that its special action on the organism must be very slight, further than as being a diluter of oxygen, which would be too stimulating if breathed in a pure state.—As to the watery vapor with which the exhaled air is saturated, the amount exhaled in 24 hours may range from about 6 to 27 oz., its usual range being between 7 and 11 oz. It is not pure water, but holds in solution considerable carbonic acid and an albuminous substance in a state of decomposition, which, on exposing the fluid to an elevated temperature, occasions a very evident putrid odor.

For the diseases of the lungs and other respiratory organs, see PNEUMONIA; PLEURISY; BRONCHITIS; TUBERCULOSIS, etc.

RESPIRA'TION, ARTIFICIAL: a requisite in all cases of suspended animation, from drowning, noxious gases, chloroform, etc. It may be performed either by forcing air into the lungs by means of a pipe passed through the mouth or the nostril into the glottis, or (which is usually preferable) by imitating the natural expansion of the chest by muscular effort, as by the methods invented by Dr. Marshall Hall and by Dr. Sylvester.

The best mode of forcing air into the lungs is by the use of a small pair of bellows, with the nozzle inserted in one of the patient's nostrils. The air should be driven into the lungs with extreme gentleness, the larynx being pressed backward against the spine, so that the air may go into the œsophagus and stomach. Gentle but firm pressure must be then applied to the chest to expel the introduced air, and fresh air again driven in; and this process of introducing and expelling the air alternately must be continued until either natural respiratory efforts appear, or the case becomes hopeless.

Sylvester's method of artificial respiration is generally regarded as decidedly preferable to that of Marshall Hall, though the same in principle. The following are

Dr. Sylvester's rules, slightly modified by a committee which was appointed to study his method: The patient was laid on his back on a plane, inclined a little from the feet upward; the shoulders are gently raised by a firm cushion being placed under them; the tongue is brought forward, so as to project a little from the side of the mouth. The operator then grasps the patient's arms just above the elbows, and raises them till they nearly meet above the head. This action imitates inspiration. The patient's arms are then turned down, and firmly pressed for a moment against the sides of the chest. A deep expiration is thus imitated; and these two sets of movements should be perseveringly continued at the rate of about 15 times in a minute.

All obstruction to the passage of air to and from the lungs should be at once, so far as is practicable, removed, and the mouth and nostrils should be cleansed from all foreign matters or adherent mucus. If no natural respiratory efforts follow after artificial respiration has been practiced for a time, hot water (120° F.) or cold water should be dashed on the face or chest, for the purpose of exciting respiratory efforts. The temperature of the body should be maintained by friction, warm blankets, etc. In the case of drowning, in addition to the foregoing suggestions, the following plan may in the first instance, be practiced: Place the body with the face downward, and hanging a little over the edge on a table, shutter, or board, raised at an angle about 30°, so that the head may be lower than the feet. Open the mouth, and draw the tongue forward. Keep the body in this posture for a few seconds, or a little longer if fluid escapes. The escape of fluid may be assisted by pressing once or twice upon the back.

RES'PIRATOR: name given by its inventor, Jeffreys, to an instrument which gives warmth to the air drawn into the lungs in breathing. It is attached to the mouth and is composed of several layers of very fine wire, fixed so near together that the exhaled air passing through them is diffused over a very large amount of surface, its warmth being absorbed by the metal, which, being an excellent conductor of heat, freely returns it to the cold air, drawn in through it in the act of inspiration. Mr. Jeffreys considers it necessary that about 20 layers of metal-work should be used, and, in order to make the instrument as light and compact as possible, each layer must be extremely thin. To 8 to 12 frames of sheet-silver, layers of fine wires are soldered about 1/200 of an inch apart, and these wires are so numerous that a large respirator of high power contains 2,000 ft. of wire, divided into about 12,000 pieces, and soldered to the frames at more than 80,000 points. The air that is inhaled, meeting with layers of wire of gradually increasing heat, is raised to a high temperature. The whole wire-work is curved, so as to fit closely to the face, and is inclosed in a border or case of soft leather; and an

outer coat, usually of a very fine open woolen fabric, is added. The form of instrument chiefly used is fixed over the mouth, and is named *The Oral Respirator*. For an instrument to cover both mouth and nostrils, the term *Orinasal Respirator* is used. The use of these instruments is in allowing persons with delicate lungs to take out-of-door exercise with safety and advantage in comparatively severe weather.—Tyndall invented a *Smoke Respirator* for firemen: there are respirators for keeping out dust and metal-filings from the lungs of factory operatives: and respirators containing a sponge soaked with creosote or carbolic acid for excluding or destroying bacteria germs.

RESPIR'ATORY SOUNDS: sounds proceeding from the lungs or the bronchi. They are of the greatest importance in diagnosis of diseases of the lungs. They may be divided into (1) those directly resulting from inspiration and expiration; (2) those of the voice, including coughing.

In the healthy state of the lungs, two distinct sounds are heard, on applying the ear, either directly or through intervention of the stethoscope, to the walls of the chest —one called the *vesicular sound*, because it is supposed to be caused by the passage of the air from the ultimate tubes into the air-cells or vesicles; and the other the *bronchial sound*, because it is generated in the bronchial tubes by the air moving through them.

The vesicular sound, known also as the *respiratory murmur*, is produced mainly during inspiration; being very faint, and sometimes scarcely perceptible during expiration. It is rather a rustle than a murmur, and has been compared to the sighing of a gentle breeze among leaves, to the sound made in the deep inspiration of a sleeping person, etc.; but a single minute's application of the ear to the chest of a healthy person, below the collar-bone, will give clearer idea of its true nature than any mere description could convey. The sound is more distinct in thin than in fat persons, in women than in men, and in children than in adults. Indeed, it is so loud in children that when an unusually noisy sound is heard in an adult, it is said to be *puerile*.—The *bronchial sound* has a blowing character, such as may be produced by blowing air quickly through a tube, and is altogether distinct from the former: it may be most clearly heard over the trachea or windpipe, and at the upper part of the sternum or breast-bone.

Such are the R. S. in the healthy lungs. In disease, any change which tends to impair the respiratory function in one part of the lungs will make the vesicular murmur abnormally weak there, and abnormally loud in the remainder; and there are other changes, besides a mere increase or decrease of intensity, that sometimes occur, into which we have no space to enter.—The bronchial sound also is liable to morbid alteration; e.g., it may be heard in parts of the chest where it is usually inaudible, in consequence of condensation

of the surrounding pulmonary tissue, or from dilatation of the tubes, independently of condensation; and in violent dyspnœa, it may sometimes be heard over the whole chest without any change of structure. These morbid sounds are only modifications of those which occur in health.—There are, however, other sounds generated by disease which are highly important in diagnosis: these are termed *Râles* by the French, and *Rattles*, *Sibilus*, *Rhonchus*, etc., by those English writers who do not adopt the French term. They may be briefly divided into the *dry* and the *moist râles*, the former being caused by the passage of the air with increased rapidity through narrowed portions of the bronchial tubes; while the latter are formed by the passage of air through a fluid of more or less tenacity in the bronchial tubes, causing the formation of a succession of bubbles, whose bursting occasions the sound.

There are two other morbid sounds connected with the respiratory system which should be noted—viz., *metallic tinkling* and the *friction sound*. Metallic tinkling is a quick sharp sound, resembling that produced by striking a glass vessel with a pin: its occurrence affords evidence of the existence of a cavity of considerable size, containing air, and surrounded by firm walls; but how the sound is produced is not definitely settled. The friction sound is produced by the rubbing together of the pulmonary and costal pleuræ when rough from inflammatory action, and is indicative of pleurisy.

RESPIRE, v. *rĕ-spīr′* [F. *respirer*—from L. *respīrārĕ*, to respire—from *re*, back or again; *spīrō*, I breathe: It. *respirare*]: to breathe out; to draw air into the lungs and expel it again; to take breath, hence to rest. RESPIR′ING, imp. RESPIRED′, pp. *-spīrd′*. RESPIR′ABLE, a. *-ă-bl* [F.—L.]: fit for breathing or for the support of animal life. RESPIR′ABLENESS, n. *-bl-nĕs*, or RESPIR′ABIL′ITY, n. *-bĭl′ĭ-tĭ*, the state or quality of being respirable. RESPIRATION, n. *rĕs-pĭ-rā′shŭn* [F.—L.]: act of breathing (see above): relief from toil. RES′PIRATOR, n. *-rā-tėr*, an apparatus for covering the mouth, which serves to warm the air before being inhaled into the lungs. RESPIR′ATORY, a. *-tėr-ĭ*, pert. to or serving for respiration.

RESPITE, n. *rĕs′pĭt* [OF. *respit*, respite—from L. *respectus*, regard, consideration—from *re*, back or again; *speciō*, I look: F. *répit*; It. *rispitto*, respite]: delay, as for breathing; pause; interval; temporary suspension of the execution of the capital sentence on a criminal; a reprieve: V. to suspend; to delay for a time; to relieve by an interval of rest. RES′PITING, imp. RES′PITED, pp.—SYN. of 'respite, n.': a stop; interval; pause; delay; stay; cessation; reprieve.

RESPLENDENT, a. *rĕ-splĕn′dĕnt* [L. *resplen′dens* or *re-splenden′tem*, shining brightly—from *re*, back or again; *splendĕō*, I shine]: very bright; having a beautiful lustre; shining with brilliancy. RESPLEN′DENTLY, ad. *-lĭ*. RESPLEN′DENCE, n. *-dĕns*, or RESPLEN′DENCY, n. *-dĕn-sĭ*, brilliant lustre; vivid brightness.

RESPLIT, v. *rē-splĭt′* [*re*, again, and *split*]: to split or rend a second time.

RESPOND, v. *rĕ-spŏnd′* [OF. *respondre*—from L. *re-spondērĕ*, to answer or reply—from *re*, back or again; *spondĕō*, I promise solemnly: It. *rispondere*: F. *répondre*]: to answer; to rejoin; to reply: N. in *Gothic arch.*, a half-pier attached to a wall and supporting an arch, etc.; in *sacred music*, a short anthem interjected in some service. RESPOND′ING, imp. RESPOND′ED, pp. RESPOND′ENT, a. *-ĕnt*, that answers to demand or expectation: N. one who replies: in *law*, one who answers; the party against whom another party presents a petition to a court which requires to be answered. RESPONDENTIA, n. *rē′spŏn-dĕn′shĭ-ă*, a contract by which a loan is effected by a bond on the security of the freight of a ship; money borrowed on the ship itself is termed *bottomry*. Such loans are resorted to by the master of a ship only in critical circumstances, to raise money for saving ship or cargo for benefit of all concerned.

RESPONSE, n. *rĕ-spŏns′* [OF. *response*, a response—from L. *responsum*, an answer or reply—from *re*, back; *spondĕō*, I promise solemnly: It. *risponso*: F. *réponse*]: a reply or answer; an oracular answer; the answer of the people in certain parts of Divine service; rejoinder. RESPONSIBLE, a. *rĕ-spŏn′sĭ-bl*, answerable; accountable; amenable. RESPON′SIBLY, ad. *-blĭ*. RESPON′SIBLENESS, n. *-bl-nĕs*. RESPON′SIBIL′ITY, n. *-bĭl′ĭ-tĭ*, state of being accountable or answerable. RESPON′SIVE, a. *-sĭv*, making answer; correspondent. RESPON′SIVELY, ad. *-lĭ*. RESPON′SIVENESS, n. *-nĕs*, the state of being responsive. RESPON′SIONS, n. plu. *-shŭnz*, the first examination which students at Oxford undergo before they can take any degree—familiarly called 'Smalls.' RESPON′SORY, a. *-sĕr-ĭ*, containing or making answer: N. [L. *responsorium*, a response] short sentence, generally a verse or portion of verse from Scripture, assigned in church services, to be uttered by the people responsively to the priest. Responsories are appended to lessons, to chapters, and to versicles, in common with which they are either chanted or simply repeated, according to the nature of the service. They are found in all ancient liturgies and in the Book of Common Prayer: in the latter the name is RESPONSE.

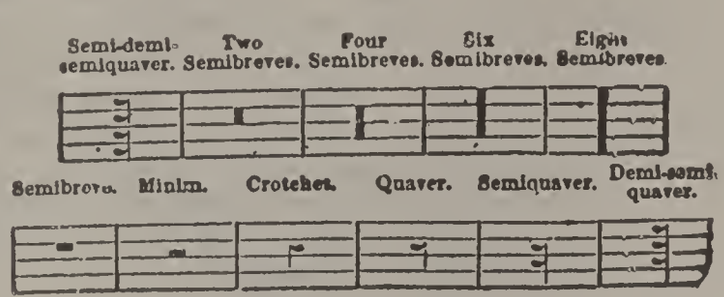
RESSAIDAR, n. *rĕs′ā-dâr′*, or RESSALDAR, *rĕs′ăl-dâr* [Hind.—from Ar. *reis*, a chief]: a native officer in a native cavalry regiment of India, in command of a squadron. RESSALAH, n. *rĕs′ă-lâ′*, a squadron of Indian native cavalry.

REST.

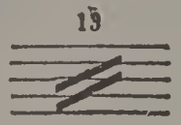
REST, n. *rĕst* [AS. *rest* or *ræst*, repose; Dan. and Sw. *rast;* Ger. *rast;* OHG. *rasta;* Dut. *rust*, ease, quiet]: a state free from motion or disturbance; quiet, repose; sleep; final sleep; death; cessation from mental or physical labor; place of repose; the grave; that on which a thing leans for support; trust; peace: in *music*, a pause in sound, or the mark to indicate it (see below): in *her.*, a charge, called sometimes organ-rest: V. to lay or place at rest; to cease from action or motion of any kind; to be tranquil; to be at peace; to recline; to be in a state of repose or slumber; to sleep the final sleep; to lean on; to trust or rely. REST'ING, imp. REST'ED, pp. REST'FUL, a. in *OE.*, quiet; being at rest. REST'LESS, a. *-lĕs*, not still; unquiet; disturbed; sleepless; unsettled; roving. REST'LESSLY, ad. *-lĭ*. REST'LESSNESS, n. *-nĕs*, the quality or state of being restless; uneasiness; want of sleep. REST-HOUSE, in *East Indies*, an empty house for the accommodation of travellers. REST-HARROW, a common leguminous weed with strong fibrous roots; *Omōnis arven'sĭs*. RESTING-PLACE, a place to rest at. TO REST WITH, to be in the power of; to depend upon.—SYN. of 'rest, n.': sleep; repose; peacefulness; stillness; cessation; quiet; tranquillity; peace; support; interval; pause; intermission; stop; stay; slumber; ease; quietness;—of 'rest, v.': to sleep; slumber; die; cease; be still; acquiesce; lean, recline;—of 'restless': unquiet; disquieted; unsettled; roving; wandering; uneasy; disturbed; sleepless; agitated; anxious.

REST, n. *rĕst* [F. *rester*, to remain; *reste*, a remainder —from L. *estārĕ*, to remain—from *re*, back; *stārĕ*, to stand: It. *restare*, to leave an overplus]: that which remains, or may remain, after the separation of a part; remnant; remainder; overplus; residue; others; a surplus found held in reserve by a bank or a public company in order to equalize the dividends, should the profits made in any one year fall below the amount required for paying the usual dividend to the shareholders: V. in *OE.*, to be left; to remain. RESTING OWING [F. *en reste*, in arrear]: in *Scots law*, remaining due; indebted.

REST, in Music: interval of silence in the course of a movement between one sound and another; its duration, like that of a note, is indicated by the form of the character representing it.



For rests of still longer duration, it is now usual to draw one or two oblique lines across the staff, and write on them in figures the number of measures during which the voice or instrument is to be silent.

Thus, 

, in common time, denotes a rest of 13 semibreves. A rest, like a note, may be prolonged by one or more dots.

RESTANT, a. *rĕs'tănt* [L. *restans* or *restan'tem*, remaining—from *restārĕ*, to remain: F. *restant*]: in *bot.*, remaining, as foot-stalks after the fructification has fallen off.

RESTATE, v. *rē-stāt'* [*re*, again, and *state*]: to state anew.

RESTAURANT, n. *rĕs'tō-râng* [F. *restaurant*—from *restaurer*, to restore, to re-establish—from L. *restaurārĕ*, to restore]: an eating-house; a place for the sale of refreshments. RESTAURATEUR, n. *rĕs-tō'ră-tėr'*, an eating-house keeper; one who keeps a place for the sale of refreshments.

REST-CURE: a method of treatment advocated by Dr. S. Weir Mitchell in 1875 for cases of nervous prostration and various conditions characterized by poor blood, and lack of muscular and nervous tone. It is a systematic treatment extending over several weeks, a combination of absolute rest of body and mind, regular diet at fixed hours, a separation from relatives and friends, passive exercise by massage, the use of electricity, and the supervision of a trained nurse. The use of medicines is of secondary importance, but frequently of value. As Dr. Mitchell puts it, the rest-cure is of service to 'invalids, unable to attend to the duties of life, and sources alike of discomfort to themselves and anxiety to others.' Consult Mitchell, *Fat and Blood* (1877).

RESTEM, v. *rē-stĕm'* [*re*, back, and *stem*]: to force back against the current.

RESTIACEÆ, *rĕs-tĭ-ā'sē-ē:* natural order of endogenous plants, nearly allied to *Cyperaceæ*, natives mostly of the s. hemisphere, and abounding at the Cape of Good Hope and in Australia. They are herbaceous, or sometimes half-shrubby; have simple stems and narrow leaves; and are hard, wiry, and rush-like. They have generally a creeping root-stock. The flowers are in heads or spikes, generally unisexual, with 2-6 glumes, sometimes with none; two or three stamens, an ovary with 1-3 cells, one ovule in each cell, the fruit a capsule or nut. *Restio tectorum* is much used for thatching houses at the Cape of Good Hope. *Wildenowia teres* is used for making baskets and brooms.

RESTIFF, a. *rĕs'tĭf* [OF. *restif;* F. *rétif,* restive]: an OE. spelling of RESTIVE. RES'TIFFNESS, n. *-nĕs,* for RESTIVENESS. See RESTIVE.

RESTIFORM, a. *rĕs'tĭ-fawrm* [L. *restis,* a cord; *forma* shape]: like a cord; rope-shaped.

RESTIGOUCHE, *rĕs-tĭ-gôsh':* one of the n. counties of New Brunswick, adjoining the Bay of Chaleurs and Quebec, area nearly 3,000 sq.m. The Restigouche river passes through it and forms a portion of the boundary between New Brunswick and Quebec. The river is about 200 m. in length and for about 24 m. from its mouth is a tidal estuary, navigable for the largest ships 18 m. The main river, formed of five head streams, flows through a mountainous region with many fertile valleys. The fishing interest is of considerable importance, and attracts sportsmen from a distance. Large quantities of lumber are exported.

RESTIPULATE, v. *rē-stĭp'ŭ-lāt* [*re,* again, and *stipulate*]: to stipulate anew. RE'STIPULA'TION, n. a new or second stipulation.

RESTITUTION, n. *rĕs'tĭ-tū'shŭn* [F. *restitution;* Sp. *restitucion,* restitution—from L. *restitūtĭō,* a restoration —from *re,* back; *statŭō,* I put or place; *sto,* I stand]: act of making good any loss, damage, or injury; the restoration of something lost or taken away; amends; reparation: in *Scotch law,* obligation of the purchaser of a movable, which really belongs to a third party, to deliver it up to such real owner without claiming repayment of price (see REPETITION).—SYN.: restoration; reparation; indemnification; return; compensation; amends.

RESTITU'TIONISTS: a Christian religious sect in New England, whose distinguishing tenet is that the restoration of mankind to the condition from which he lapsed through Adam's sin of disobedience is near at hand, and that the reign of perfect love, justice, purity, and holiness is soon to commence. They observe the Sabbath of the Hebrews as a holy day of rest and assemble weekly for worship on the evening (Friday) before the Sabbath.

RESTIVE, a. *rĕs'tĭv* [OF. *restif,* restive, stubborn: F. *rétif*—from L. *restārĕ,* to stand still, to withstand: It. *restio*]: restless and unwilling to stir, or only moving backward, as a horse; obstinate in refusing to move forward; impatient under restraint or opposition; stubborn; recalcitrant; uneasy; in *OE.,* being at rest; being less in motion. RES'TIVELY, ad. *-lĭ.* RES'TIVENESS, n. *-nĕs,* obstinacy or unwillingness to move forward; obstinate unwillingness or impatience. RESTY, a. *rĕs'tĭ,* restive; in *OE.,* spelled RESTIFF.

RESTORA'TION, THE, in English History: resumption of monarchical govt., on the accession of Charles II., May 29, 1660, after an interval of 11 years, from

Jan. 30, 1649, when Charles I. was beheaded, during which the govt. of Great Britain was republican. The restoration was appointed by various statutes to be observed as a festival in the Church of England, with special religious services; but its observance was abolished 1859.

RESTORATION: in matters of fine art, the putting of a building, a work of sculpture, a painting or other work of art into what is thought to have been its original perfect condition. There is, however, a secondary meaning: this is the preparation of drawings showing what would be the appearance of the building or other work of art if restored according to the above definition.

RESTORA'TIONIST: believer in only a temporary future punishment—an old doctrine under a new name. It has found advocates at all times since the days of Origen (q.v.). One of the most remarkable doctrines of that Father was his belief of a general *apokatastasis*, or 'restoration' of all things, in which, after a purgation proportioned to the various moral conditions of their souls at the time of death, all men, however wicked, and all the evil angels, even Lucifer himself, would be restored to holiness and to the favor of God, and reunited to Him in heaven. This doctrine was condemned at the time, and has since been repeatedly rejected by the churches of the East as well as of the West. Restorationism has been renewed in more than one form since the Reformation by various classes, who have taken the name Universalists (q.v.). The particular title of Restorationists was given in America to the followers of Hosea Ballou (q.v.), who, in addition to the tenet above explained, preached that all retribution is confined to this life; and who, though he denied the immortality of the soul, yet taught that at the resurrection all men will be admitted to everlasting happiness.

RESTORE, v. *rĕ-stōr'* [F. *restaurer*, to restore—from L. *restaurārĕ*, to make to stand again, to restore: It. *restaurare*]: to replace; to give or bring back that which has been lost or unjustly taken away; to bring back to its former state; to rebuild; to renew: N. in *OE.*, restoration. RESTOR'ING, imp. RESTORED, pp. *rĕ-stōrd'*. RESTOR'ABLE, a. *-ă-bl*, capable of being brought to a former condition. RESTOR'ABLENESS, n. *-nĕs*, the quality or state of being restorable. RESTORATION, n. *rĕs'tō-rā'-shŭn*, the act of restoring or replacing; renewal; recovery; restitution; reparation (see RESTORATION, THE). RES'TORA'TIONIST, n *-shŭn-ĭst* (see above). RESTORATIVE, a. *rĕ-stŏr'ă-tĭv*, having power to restore or renew, as health and vigor: N. a medicine efficacious in recruiting the vital powers. RESTOR'ATIVELY, ad. *-lĭ*. RESTOR'ER, n. *-ėr*, one who restores.—SYN. of 'restore': to recover; replace; renew; renovate; reinstate; re-establish; return; revive; recover; refund; repay; repair; heal; cure.

RESTRAIN, v. *rĕ-strān′* [OF. *restraindre;* F. *restreindre*, to restrict—from L. *restringĕrĕ*, to check, to restrain—from *re*, back; *stringo*, I draw tight: It. *restringere*]: to hold back; to bind fast; to curb; to repress; to limit; to abridge. RESTRAIN′ING, imp. RESTRAINED, pp. *rĕ-strānd′*. RESTRAIN′ER, n. *-ẽr*, one who restrains. RESTRAIN′ABLE, a. *-ă-bl*, capable of being restrained. RESTRAIN′MENT, n. *-mĕnt*, the act of restraining. RESTRAIN′EDLY, ad. *-ĕd-lĭ*. RESTRAINT′, n. *-strānt′*, the act of restraining; abridgment of liberty; restriction; hindrance of will; repression; that which restrains.—SYN. of 'restrain': to withhold; keep in; repress; suppress; hinder; abridge; hold in; limit; confine; check; stop; curb; coerce; restrict;—of 'restraint': abridgment; prohibition; limitation; restriction; repression; hindrance; check; stop; curb; coercion; confinement.

RESTRENGTHEN, v. *rē-strĕngth′n* [*re*, again, and *strengthen*]: to strengthen anew.

RESTRICT, v. *rĕ-strĭkt′* [L. *restrictus*, confined, restricted—from *re*, back; *stringĕrĕ*, to draw tight (see RESTRAIN)]: to keep back within certain limits; to circumscribe; to limit. RESTRICT′ING, imp. RESTRICT′ED, pp. limited; confined to bounds. RESTRICTION, n. *rĕ-strĭk′shŭn* [F.—L.]: limitation; restraint; that which restricts. RESTRICT′IVE, a. *-ĭv*, having the quality of limiting, or expressing limitation; imposing restraint. RESTRICT′IVELY, ad. *-lĭ*.—SYN. of 'restrict': to restrain; curb; confine; coerce; limit; bound; circumscribe; repress.

RESTY: see under RESTIVE.

RESUBJECT, v. *rē′sŭb-jĕkt′* [*re*, again, and *subject*]: to subject a second time. RE′SUBJEC′TION, n. a second subjection.

RESUBLIME, v. *rē′sŭb-līm′* [*re*, again, and *sublime*]: to sublime again. RESUB′LIMA′TION, n. a second sublimation.

RESULT, v. *rĕ-zŭlt′* [F. *résulter*, to result—from L. *resultārĕ*, to spring back—from *re*, back; *salĭō*, I leap: It. *resultare*]: to follow or have origin, as a consequence, from facts, arguments, thought, etc.; to spring; to arise; to originate; to issue; to ensue: N. that which proceeds from a given state of facts, etc.; consequence; inference; decision; issue. RESULT′ING, imp. RESULT′ED, pp. RESULT′ANT, n. *-ănt*, in *dyn.*, a force which results from the composition or putting together of two or more forces acting on the same point: ADJ. that arises from combination. RESULT′LESS, a. *-lĕs*, without result.—SYN. of 'result, n.': consequence; effect; issue; event; conclusion; inference;—of 'result, v.': to spring; proceed; arise; ensue; terminate.

RÉSUMÉ, n. *rā-zō′mā* [F. *résumé*, a summary; *résumer*, to sum up (see RESUME)]: a summing up; a condensed statement; a summary; a recapitulation.

RESUME, v. *rē-zūm′* [L. *resumĕrĕ*, to take back, to resume—from *re*, again; *sumo*, I take: Sp. *resumir*; F. *résumer*]: to take back that which has been given or taken away; to proceed or take up again after interruption; to begin again; to take again. RESUM′ING, imp. RESUMED′, pp. *-zūmd′*. RESUM′ABLE, a. *-ă-bl*, that may be taken back or up again. RESUMP′TION, n. *-zŭmp′shŭn* [L. *resumptus*, resumed]: the act of taking back or taking again. RESUMP′TIVE, a. *-tĭv*, taking back or again.

RESUMMON, v. *rē-sŭm′mŏn* [*re*, again, and *summon*]: to summon or call again.

RESUMPTION: see under RESUME.

RESUPINATE, a. *rē-sū′pĭ-nāt* [L. *resupīnātus*, bent or turned back—from *re*, back or again; *supīno*, I bend backward; *supīnus*, lying on the back]: in *bot.*, so turned or twisted that the parts naturally the undermost become the uppermost, and *vice versa*. RESUPINE, a. *rēs′ū-pīn′*, lying on the back.

RESUPPLY, v. *rē′sŭp-plī′* [*re*, again, and *supply*]: to supply again.

RESURGENT, a. *rē-sėr′jĕnt* [L. *resur′gens* or *resurgen′tem*, rising or appearing again—from *re*, again, *surgĕrĕ*, to rise]: rising again, as from the dead, swelling up.

RESURRECTION, n. *rĕz′ėr-rĕk′shŭn* [F. *résurrection*—from L. *resurrectiōnem*, resurrection—from *resurrec′tus*, risen again—from *re*, again; *surgĕrĕ*, to rise: It. *resurrezione*]: a rising again from the dead; the rising of the dead from the grave at the general judgment (see RESURRECTION, THE): a moral revival, as from a state of ignorance or degradation. RES′URREC′TIONIST, n. *-ĭst*, a despoiler of graves for purposes of dissection.

RESURRECTION, THE: the rising from the dead of the human body in the future life. We find dim hints of this doctrine in different religions, especially in later Judaism, but the doctrine is peculiarly Christian. In the earlier Hebrew Scriptures, the Pentateuch, the Psalms, the earlier prophecies, there is no distinct reference to it. It is supposed to be alluded to in Is. xxvi. 19, and in Ezek. xxxvii., in the well-known chapter as to the revival of dry bones in the valley of vision; and in Daniel xii. 2, there is the distinct affirmation that 'many that sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt.' There is also a well-known passage in Job (xix. 25–27) which has been usually considered to refer to the R. of the body. A large school of recent criticism denies the validity of this reference; but this denial has called forth stronger argument in defense of the reference. In the later Judaism the tenet of the R. appears, and in the time of Christ it had become a formal doctrine of the Pharisees. The general body of the Jewish people also seem to have believed it. The Sadducees alone disputed it (Matt. xxii. 23, sq.; Luke xx. 27, sq.; Acts xxiii. 6–8). It appears, in fact, to have become bound

up in the Jewish mind with the idea of a future life, so that an argument which proved the one proved the other; and the Sadducees not merely denied the distinctive idea of the resurrection, but further denied the existence of any 'angel or spirit.'

It remained for Christ and his apostles to reveal clearly the resurrection of *man*—soul and body—and to connect it with the fact of Christ's own resurrection as its special evidence and pledge. The following may be stated as the main points involved in the doctrine as it appears in the New Test.: 1. The resurrection is ascribed to Christ himself; it will complete his work of redemption for the human race (John v. 21; I Cor. xv. 22, sq.; I Thess. iv. 14; Rev. i. 18). 2. All the dead will be raised indiscriminately to receive judgment according to their works, 'they that have done good, unto the resurrection of life; and they that have done evil, unto the resurrection of condemnation' (John v. 21-29; I Cor. xv. 22; Rev. xx. 11). 3. The resurrection will be at 'the last day,' by which seems to be meant the close of the present world (John vi. 39, 40; xi. 24; I Thess. iv. 15). 4. The great event is represented as ushered in by the sound of a trumpet—i.e., by a mighty *call* heard by the whole race of man—a representation used probably in view of the Jewish practice of convening great assemblies by sound of trumpet (I Cor. xv. 52; I Thess. iv. 16). 5. As to the character of the change through which men's bodies are raised after the lapse of ages, with their identity preserved, nothing is distinctively made known; the fact is abundantly and most positively declared, but the mode—like other points of curious philosophical inquiry concerning revealed facts—is not in any way even remotely indicated. The impossibility of such a change was evidently a subject of argument in the primitive Christian age, and the apostle Paul argues in its favor with majestic force (I Cor. xv. 32, sq.) from common occurrences scarcely less mysterious in the natural world. It is not professed, however, that such occurrences explain the resurrection: the apostle designs rather to silence cavils, and to invigorate faith by freeing the doctrine from prejudices which ignorance tended to attach to it. Arguing from God's infinite power as displayed in the processes of creation, he would, as it were, press the question which he asks elsewhere: 'Why should it be thought a thing incredible with you that God should raise the dead?' (Acts xxvi. 8), rather than attempt any explanation, of which the subject does not really admit in the present limited capacity of the human mind. And this is the spirit in which this sublime fact of the resurrection of man—body and soul—is to be contemplated. Its *mode*—involving the *nature of matter*, which is not yet ascertained by any science, but only conjectured in opposing theories, involving also the still unknown relations of matter and spirit—necessarily transcends our present intelligence.

RESURRECTIONISTS, or Body-snatchers: a class of miscreants who made a livelihood by rifling graves, taking out the corpses and selling them to schools of medicine and surgery as 'subjects' for dissection or demonstration. So long as in Britain the supply of 'subjects' from the gallows sufficed for the needs of the schools, there was no call for a resort to illegal means. But when, in the progressive reform of criminal law, capital punishment was less frequently inflicted, while medical and surgical schools were greatly multiplied, the necessity for 'subjects' overrode the laws, and the trade of the resurrectionist flourished. As the business was naturally risky and precarious the price of 'subjects' was, for each, $40 to $50. The first Anatomy Act of the British Parliament (1832) provides that schools of anatomy and teachers and demonstrators of anatomy shall be licensed; such schools and such teachers are empowered to receive as subjects for dissection the cadavers of persons dying friendless, in poorhouses, hospitals, and elsewhere; and the trade of the resurrectionist was practically done away in Britain by the passage of the act. In the United States the plundering of graves for subjects of dissection is a misdemeanor for which the offender may be indicted at common law. Body-snatching, or rifling of graves for the purpose of exacting a ransom from the families of the dead is not infrequent; a notable instance was that of the stealing of the body of A. T. Stewart in 1878. The body-snatchers in this case demanded a ransom of $200,000, which afterward they reduced to half that sum: finally, they received $20,000 with the assurance that they should not be prosecuted; since that time extraordinary precautions are taken against body-snatching from the graves, especially of very rich persons.

RESURVEY, v. *rē'sėr-vā'* [*re*, again, and *survey*]: to survey a second time.

RESUSCITATE, v. *rĕ-sŭs'sĭ-tāt* [L. *resuscĭtātus*, roused again, revived—from *re*, again; *suscĭtārĕ*, to raise—from *sub*, under; *citārĕ*, to rouse: It. *risuscitare:* F. *ressusciter*]: to recover from apparent death; to revivify; to revive; to come to life again. Resus'citating, imp. Resus'citated, pp. Resus'citator, n. *-tėr*, one who resuscitates. Resus'citable, a. *-tă-bl*, that may be recovered from apparent death. Resus'citation, n. *-tā'shŭn*, the act of reviving from a state of apparent death. Resus'citative, a. *-tā-tĭv*, revivifying.

RESZKE, *rĕsh'kĕ*, Edouard de: Polish opera singer: b. Warsaw, Dec. 23, 1856. He studied at the Collège de l'Agriculture of Proskao, and then turned attention to the cultivation of his remarkable bass voice. He appeared in Paris in 1876 at the Théâtre Italien, and since then has sung in the large cities of Europe and America. He created the rôle of the King of Catalini's *Edda* and Carlo V. in Marchetti's *Don Giovanni d'Austria* at Turin.

He is especially identified with *Mephistopheles* in *Faust;* Frère Laurent in *Romeo.et Juliette,* and the Wagnerian rôles of Hans Sachs, Wotan and King Mark.

RESZKE, JEAN DE: Polish opera singer: brother of Edouard de Reszke: b. Warsaw Jan. 14, 1853. He completed the law course at the Warsaw University; but having been surrounded by a musical atmosphere in his home, and having sung as a boy in the cathedral, he decided upon singing as a career. He studied with Ciaffei and Cologni in Italy and made his début in Venice in 1874 as Alfonso in *La Favorita.* In the two following years he appeared in London and Paris. Hitherto he had sung baritone rôles, but in 1876 he retired to cultivate his natural voice, whose register was that of a tenor. In 1880 he reappeared, singing at Madrid in *Robert le Diable.* Following this he created the part of Jean in Massenet's *Herodiade* in Paris and was engaged at the Opera where he sang from 1885 to 1890, appearing in *Le Prophète, L'Africaine, Aida, Faust, Romeo et Juliette, Don Juan,* and *Le Cid,* which Massenet composed for him. From 1893 to 1899 he appeared continuously at the Metropolitan Opera House, New York, where he added to the foregoing rôles several Wagnerian parts, particularly *Siegfried.* In later years he was associated artistically with his brother Edouard.

RET, v. *rĕt* [Ger. *rösten,* to steep: Dut. *rotten,* to rot, to putrefy: a modification of *rot,* Sw. *rota,* to rot or putrefy]: to destroy by rotting. TO RET FLAX, to steep it in water in order to separate the fibre by incipient rotting. RET'TING, imp. RET'TED, pp. RET'TERY, n. *-tėr-ĭ,* a place or factory for preparing flax.

RETAIL, v. *rĕ-tāl'* [F. *retaille,* a shred or small piece cut from a thing—from *re,* again; *tailler,* to cut; *taille,* a slitting—from L. *tālĕă,* a thin rod, a cutting]: to sell in small quantities; to sell at second-hand; to relate in broken parts, as a story: N. *rē'tāl,* the sale of goods in small quantities; opposite of *wholesale.* RETAIL'ING, imp. RETAILED', pp. *-tāld'.* RETAIL'ER, n. *-ėr,* one who retails; one who sells in small quantities.

RETAIN, v. *rĕ-tān'* [F. *retenir*—from L. *retinērĕ,* to keep back, to restrain—from *re,* back; *tenĕō,* I hold: It. *ritenere*]: to hold or keep in possession; to keep; to keep back; to hold from escape; not to lose or lay aside; to keep in pay; to engage by a fee paid. RETAIN'ING, imp. RETAINED', pp. *-tānd'.* RETAIN'ER, n. *-ėr,* an attendant; a servant; a hanger-on: in *law* (see below). RETAIN'ABLE, a. *-ă-bl,* capable of being retained.—SYN. of 'retain': to hold; restrain; keep; detain; preserve; hire; withhold; continue.

RETAIN'ER, in Law: act of engaging an attorney or counsel to attend to a certain suit or case. The retainer is generally a precautionary measure resorted to only in the case of eminent counsel, the effect being to prevent the other party from securing the services of such counsel.

RETAIN'ING WALL: wall built to retain earth, sand, or other incoherent substances in positions and forms which otherwise they could not maintain. These substances, if left to themselves, will not stand with vertical sides, but will fall down till they assume a certain slope. The angle which this slope makes with the horizontal is called the 'angle of repose.' This angle varies according to the nature of the material; e.g., that of moist soil is about 45°, while fine sand assumes an angle of about 30°.

In fig. 1, E represents a section of a mass of earth,

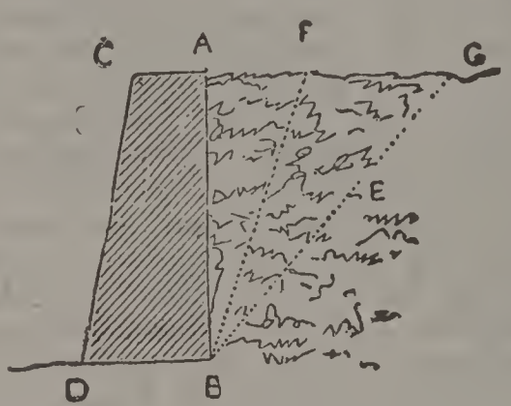


Fig. 1.

which it is desired to retain by means of the wall ABCD. If we draw BG from B at the angle of repose. it is evident, from what has been said, that the prism ABG is kept in position by the retaining wall; and if the earth began to give way, it would do so by slipping on some line BF. The wedge-shaped piece ABF, which has the greatest tendency to separate itself from the rest of the mass, is called the 'prism of greatest pressure;' and the retaining wall ABCD must be made of sufficient weight and thickness to prop it up and resist its tendency to slide. The line BF is found to bisect the angle ABG. In estimating the requisite thickness of the wall, it must be taken into account that the wall may give way in various manners; it may be overturned, or it may slide as a whole along its base DB, or the upper parts may give way, while the base remains. From these data, mathematical formulæ have been worked out, which determine the thickness requisite for different situations and materials, such as that given by Poncelet for ordinary materials and within ordinary limits:

$$x = \cdot 285(\mathrm{H} + h).$$

Where H, the height of the wall, and h, the additional height of the bank above the top of the wall, being given, x, the thickness of the wall, can be found.

These formulæ, however, are of little practical value, on account of the varying nature of the data on which they are founded, and of the excess of strength requisite in all such constructions, to allow for causes of failure, which cannot be foreseen or provided for in the calcu-

lations. Practical experience is found to be the only safe guide in all such considerations.

Figs. 2, 3, and 4 represent sections of forms of retaining walls in common use. Figs. 2 and 3 are used in retaining earthworks, while fig. 4 is a common form of dock-wall.

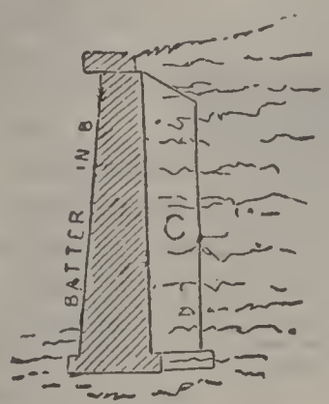


Fig. 2.

In that shown by fig. 2, the thickness at the top is 2 to 3 ft.; the back is vertical, and the front is sloped out 1 ft. for every 8 ft. in height; so that the thickness increases with the height, in the same manner as the pressure of the earth, which it is required to resist. The foundation is of large stones, extending beyond the sides of the wall, so as to distribute the pressure on as large a surface as possible. It is also sunk 2 or 3 ft. below the adjoining surface, to resist its tendency to slip on its base. At its back are placed counterforts, C, which are built up with the wall, and are about 3 ft. long by $2\frac{1}{2}$ ft. wide, 8 to 10 ft. apart. These counterforts stiffen the wall like ribs; they put its centre of gravity further back, and so resist the tendency to heeling or overturning; they also act advantageously in dividing the earth, and so diminishing the length of the mass, which can act together against the wall. This form is very simple in construction.

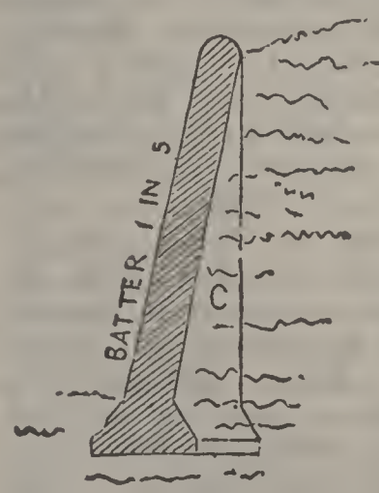


Fig. 3.

The form of wall in fig. 3 is that which requires least material; it also, on account of its thinness, dries and consolidates rapidly, but is not so easily built as that shown in fig. 2.

The dock-wall in fig. 4 is made much heavier than the simple pressure of the earth behind it would require; for it has many strains to bear of exceptional character due to its situation; such are the machinery and goods deposited on the quays, and the possible accident of the dock being suddenly emptied of water, while the earth behind the wall is full of water.

In the construction of a retaining wall, a great desideratum is, that the earth behind it be well drained; for if water be allowed to accumulate behind the wall, the earth becomes semi-fluid, in which state it gives a very much increased pressure. For this purpose, holes are left through the wall called 'weeping-holes;' these holes are about 9 inches high and 2 inches wide, and are generally placed about 1 for every 36 sq. ft. of wall. Also

stones without mortar are frequently built up behind the wall, so forming an open stratum, into which the

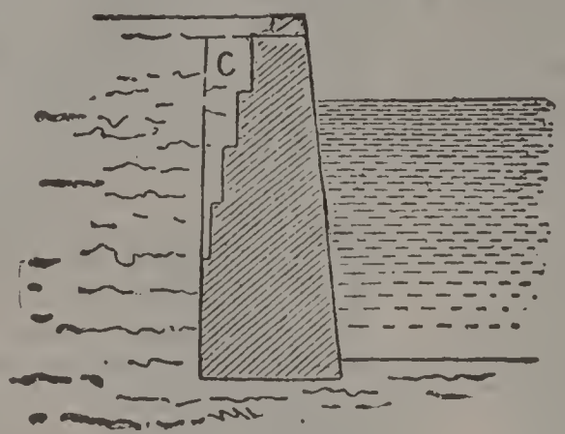


Fig. 4.

water drains, and is thence carried off through the weeping-holes.

RETAKE, v. *rē-tāk′* [*re*, again, and *take*]: to take again; to recapture.

RETALIATE, v. *rĕ-tăl′ĭ-āt* [mid. L. *retaliātus*, retaliated—from L. *re*, back; *tālĭō*, retaliation—from *tālis*, such, like: F. *talion*, a pain or requital equal to the harm done, tit for tat]: to return by giving like for like, in an ill sense; to requite or pay back with the like. RETAL′IATING, imp. RETAL′IATED, pp. RETAL′IA′TION, n. *-ā′-shŭn*, the return of like for like; retribution. RETAL′IATIVE, a. *-ā-tĭv*, or RETAL′IATORY, a. *-ă-tėr-ĭ*, returning like for like.—SYN. of 'retaliation': reprisal; retribution; requital, repayment; punishment; revenge.

RETARD, v. *rĕ-tâ,d′* [F. *retarder*, to delay; *retard*, delay—from L. *retardārĕ*, to impede, to retard—from *re*, back or again; *tardārĕ*, to make slow—from *tardus*, slow: It. *ritardare*]: to impede; to hinder; to render slower: N. in *OE.*, retardation; delay. RETARD′ING, imp. RETARD′ED, pp. RETARD′ER, n. *-ėr*, he or that which retards. RETARD′MENT, n. *-mĕnt*, or RETARDATION, n. *rē′târ-dā′shŭn* [F.—L.]: the act of lessening the velocity of motion; hindrance. RETARD OF THE TIDE, the interval between the transit of the moon at which a tide originates and the appearance of the tide itself. RETARDATION OF MEAN SOLAR TIME, the change of the mean sun's right ascension in a sidereal day, by which he appears to hang back, as it were, in his diurnal revolution.—SYN. of 'retard, v.': to hinder; obstruct; procrastinate: defer; impede; detain; delay.

RETCH, v. *rēch* [AS. *hræcan*; Icel. *hrækja*, to retch: Norw. *rækja*, to hawk, to spit: Dut. *rachelen*, to cough: It. *recere*, to vomit: Gael. *ruchd*, to grunt, to belch]: to make an effort to vomit; to strain; to heave at the stomach. RETCH′ING, imp. RETCHED, pp. *rēcht*.

RETE, n. *rē'tē* [L. *rētĕ*, a net, a snare]: a net; network. RETECIOUS, a. *rĕ-tē'shŭs*, resembling network. RETICLE, n. *rĕt'ĭ-kl*, a small net. RETE MIRAB'ILE, *mĭr-ăb'ĭ-lē* [L. a wonderful net]: in *anat.*, a complicated anastomosis of blood-vessels. RETE MUCOSUM, *mū-kō'-zŭm* [L. a mucous net]: in *anat.*, the soft underlayer of the epidermis or scarfskin, which gives the color to the skin.

RETELL, v. *rē-tĕl'* [*re*, again, and *tell*]: to tell again.

RETENE, n. *rĕt'ēn:* a resinous body of the anthracene series, polymeric with benzine.

RETENTION, n. *rĕ-tĕn'shŭn* [F. *rétention*—from L. *retentĭōnem*, a holding back—from *re*, back; *tenĕō*, I hold: It. *ritenzione*]: act or power of retaining, as in the memory; the memory: undue withholding of some natural discharge; restraint; reserve. RETENTIS, n. *rĕ-tĕnt'ĭs*, things retained. RETEN'TIVE, a. *-tĭv*, having power to retain, as in the memory. RETEN'TIVELY, ad. *-lĭ*. RETEN'TIVENESS, n. *-nĕs*, the quality of being retentive. TO BE KEPT IN RETENTIS, to be kept among things retained or reserved for some future purpose.

RETENTION OF U'RINE: lack of power to discharge the urine from the bladder: it must be distinguished from a far more serious affection known as *suppression of urine*, in which also no urine is passed because in this case none is secreted by the kidneys and consequently there is none in the bladder. Retention of urine may arise either from change of structure of the parts concerned in the expulsion of the urine, or from mere disordered function unaccompanied by change: the former causes are termed *organic*, the latter *functional*.

Among chief organic causes are: 1. Permanent stricture of the urethra (q.v.). 2. Swelling of the mucous membrane of the urethra, in consequence of a blow on the perinæum, or other external injury. 3. Tumors within the urethra. 4. Foreign bodies in the urethra, as calculi, clots of blood, or mucus, etc., which have entered it from the bladder, or fragments of bougies, etc., introduced from without. 5. Enlargement of the prostate gland, especially in aged men. The treatment in retention of the urine from these causes must be left in the hands of the surgeon.

The principal functional causes are: 1. Spasm of the urethra, often termed spasmodic stricture. 2. Lack of power in the muscular coat of the bladder. Spasm of the urethra is most likely to occur in those who have a slight permanent stricture, or a urethra irritable from other causes. The spasm usually follows exposure to cold and wet, but it may be excited by piles or other sources of irritation in the lower bowel, or by the use of cantharides either taken internally as a medicine, or absorbed from blisters applied to the skin. The patient finds himself unable to pass his water, though he has a great desire and makes strong efforts to do so. The

bladder soon becomes so distended that it can be felt as a tense round tumor above the pubes. If relief be not speedily afforded, the bladder may burst and discharge its contents into the peritoneal cavity; or the urethra behind the stricture gives way, and the urine is extravasated into the cellular tissue of the adjacent parts—a condition which, if not promptly relieved by surgical interference, is likely to be followed by gangrene and death. If the symptoms are not very severe, and there is no evidence of old permanent stricture, a hot bath, combined with administration of the tincture of muriate of iron, in doses of ten minims, taken every ten minutes in thin gruel or in barley-water, will often give relief. If these means fail, surgical assistance must be at once procured, and the bladder evacuated by a catheter. If this also fails, the surgeon must either puncture the bladder through the rectum or above the pubes, or make an incision into the urethra either at or behind the seat of the stricture.

Paralysis of the muscular coat of the bladder may arise from the debility of old age, from the depressed state of the nervous system in fevers of the typhoid type, from injury or disease of the head or spine, and from various other causes. In temporary form, it is often a result of overdistention of the bladder from stricture or prostate disease, and it sometimes occurs in the case of nervous sedentary persons, if they have allowed rather more than the usual time to elapse without evacuating the bladder. It should be generally known that retention of urine from paralysis is sometimes accompanied with dribbling away of the water, so that the retention might at first sight be mistaken for *incontinence* of urine. On examination, however, it will be found that the bladder is abnormally distended, and cannot be emptied by the act and will of the patient. In these cases, the urine must for a time be regularly drawn away by the catheter. General tonics, such as the cold bath (sometimes preferably the sitz-bath) and chalybeates, must be given to improve the general health; while medicines supposed to act locally on the mucous coat of the bladder, or on the spinal cord, must be simultaneously administered.

RETENTIVENESS: a quality of memory by which the after-effects of mental processes are long held, with capability of reproduction. Retention is of primary importance in judgment, particularly in the study of processes that are continuous, or in which there is a continuity of interest. Thus when one hears a succession of sounds, and judges that the second, for instance, is louder than the first, the property of retention, by which the after-effect of the hearing of the first sound is compared with the second, is of great importance. In many this attribute of retentiveness is weak, seriously impairing their judgment. See MEMORY; MIND; BRAIN.

RETEPORA, n. plu. *rē′tĕ-pō-ră* [L. *rētĕ*, a net; *pŏrus*, a pore]: genus of Bryozoa which have their cell-pores arranged in net-like order. RETEPORE, n. *rē′tĕ-pōr*, one of the Retepora.

Retepora cellulosa.

RETFORD, *rĕt′fėrd*, EAST: small municipal borough and market-town, county of Notts, England, on the right bank of the Idle, affluent of the Trent, 138 m. n.n.w. of London by the Great Northern railway. West R., on the other side of the river, and connected with East R. by a strong bridge of five arches, is a more modern and much smaller town.—Tanning, coach-making, and paper-making are carried on, and there are several iron-foundries. Pop. of municipal borough (1881) 9,748; (1891) 10,603.

RETHEL, *rėh-tĕl′*: town of France, dept. of Ardennes, prettily situated on the right bank of the Aisne. Woolen and other manufactures are carried on. Pop. 8,000.

RETIARIUS, n. *rē-tĭ-ā′rĭ-ŭs* [L.—from *rētĕ*, a net]: in *Rom. antiq.*, a gladiator who wore only a short tunic and carried a trident and net: with these, he endeavored to entangle and dispatch his adversary, who was armed with a helmet, a shield, and a sword.

RETIARY, n. *rē′shĭ-ėr′ĭ* [L. *rētĭārĭŭs*, one who fights by using a net, a kind of gladiator—from *rētĕ*, a net]: one of the class of spiders which spin webs to catch their prey: ADJ. net-like. RETIARIÆ, n. plu. *rē′shĭ-ā′rĭ-ē*, the systematic name for the class.

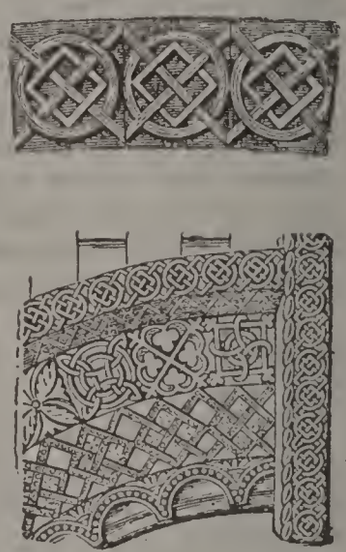
RETICENCE, n. *rĕt′ĭ-sĕns*, or RET′ICENCY, n. *-sĭ* [F. *réticence*—from L. *retĭcentĭă*—from *reticens* or *reticen′tem*, keeping silence—from *re*, back or again; *tacĕō*, I am silent: It. *reticenza*, concealment]: concealment by silence. RET′ICENT, a. *-sĕnt*, silent; reserved; taciturn.

RETICULARIA, n. *rē-tĭk-ū-lā′rĭ-a*: name proposed by Dr. Carpenter, 1862, and now generally adopted to designate those Protozoa, such as the *Foraminifera*, in which the pseudopodia run into one another and form a network.

RETICULE, n. *rĕt′ĭ-kūl* [F. *réticule*, a reticule—from L. *retic′ŭlum*, a small net—from *rētĕ*, a net]: a lady's work-bag; a small bag for carrying in the hand; in a *telescope*, a network of fine spiders' threads, or of wires crossing each other at right angles, and dividing the field of view into a series of small equal squares. RETICULAR, a. *rē-tĭk′ū-lėr*, having the form of a small net; having interstices like network. RETIC′ULATE, a. *-lāt*, resembling network; in *arch.*, formed of diamond-shaped stones, or square stones laid diagonally; in *zool.* or *bot.*, having distinct veins or lines crossing like network: V. to form into a structure of veins or lines crossing each other as in network. RETIC′ULATING, imp. running into meshes. RE-

TIC′ULATED, a. *-lā-tĕd.* RETIC′ULA′TION, n. *-lā-shŭn*, any organization resembling network; that which is reticulated. RETIC′ULUM, n. *-lŭm*, the second or honeycombed cavity in the compound stomach of ruminant animals; in *anat.*, an extremely delicate network of tissue supporting the proper nervous substance in the brain and the spinal cord; in *bot.*, the debris of crossed fibres about the base of the petioles in palms.

Reticulated Work (Roman).



Reticulated Moldings.

RETIFORM, a. *rĕt′ĭ-fawrm* [L. *rētĕ*, a net; *forma*, shape]: having the structure or form of a net.

RETIMO, *rā-tē′mō*: seaport town of the island of Crete, on its n. coast, 35 m. w. from Candia. The neighborhood is productive of oil and wine. Pop. about 6,000, of whom two-thirds are Turks, and the rest Greeks.

RETINA, n. *rĕt′ĭ-na* [L. *rētĕ*, a net]: one of the coats of the eye, containing the sensory nerve-endings which receive the impressions resulting in the sense of vision (see EYE). RETINAL, a. *rĕt′ĭ-nal*, of or pert. to the retina. RET′INI′TIS, n. *-nī′tĭs* [*itis*, denoting inflammation]: inflammation of the retina. RETINOSCOPY, n. *rĕt-ĭn-ŏs′kō-pĭ* [Eng. *retina*; Gr. *skopeō*, I see]: examination of the retina of the eye.

RETINACULUM, n. *rĕt′ĭ-năk′ū-lŭm* [L. *retinac′ŭlum*, a holdfast, a band—from *retinērĕ*, to keep back—from *re*, back; *tenĕō*, I hold]: in *bot.*, the viscid disk by which the pollen-masses in orchids adhere to insect-visitors.

RETINASPHALT, n. *rĕt′ĭn-ăs-fălt′* [Gr. *rhētinē*, resin; *asphaltos*, bitumen]: a mineral resin found in the coal strata; retinite.

RETINERVIS, a. *rĕt′ĭ-nėr′vĭs* [L. *rētĕ*, a net; *nervus*, a nerve]: in *bot.*, having reticulated veins.

RETINITE, n. *rĕt'ĭ-nīt* [Gr. *rhētīnē*, resin or rosin]: one of the mineral resins, occurring in brown-coal and peat formations in roundish irregular lumps, of a yellowish-brown color, and slightly transparent; also called *resinite* or *retinasphalt*. RET'INOID, a. *-noyd* [Gr. *eidos*, form]: resin-like.

RETINUE, n. *rĕt'ĭ-nū* [OF. *retenue*, a retinue: F. *retenir*, to hold land of a superior: L. *retinĕō*, I retain—from *re*, back; *tenĕō*, I hold]: the suite or attendants of a person of distinction, chiefly on a journey; a train of persons

RETIRADE, n. *rĕt'ĭ-râd* [F.—from *retirer*, to withdraw]: in *fort.*, a kind of retrenchment in the body of a bastion or other work to which a garrison may retreat to prolong a defense. It usually consists of two faces, which make a re-entering angle.

RETIRE, v. *rĕ-tīr'* [F. *retirer*, to draw back: It. *tirare*, to draw, to pull: Goth. *tairan*, to tear, in the sense of any violent action]: to depart; to withdraw; to withdraw from business or active life; to fall back, as the tide from the shore; in *mil.*, to fall back a short distance, as a body of troops in the field; to take up and pay when due, as a bill of exchange: N. in *mil.*, a bugle-sound intimating to skirmishers that they are to fall back; in *OE.*, a retreat; place of privacy. RETIR'ING, imp.: ADJ. modest; reserved. RETIRED', pp. *-tīrd'*: ADJ. secluded from public notice; private; secret; withdrawn. RETIRED'LY, ad. *-tīrd'lĭ*. RETIRED'NESS, n. *-nĕs*, a state of retirement; solitude. RETIREMENT, n. *rĕ-tīr'mĕnt*, state of being withdrawn; act of withdrawing from active life or from public notice; private way of life; secluded residence; seclusion; departure. RETIRED LIST, a list of officers retired from the public service (see below). RETIRING PENSION or ALLOWANCE, a pension or annuity granted to a person on his withdrawal from office or service.—SYN. of 'retire': to withdraw; depart; retreat; recede; secede; leave; retrocede;—of 'retirement': departure; retreat; seclusion; privacy; solitude; withdrawment; loneliness.

RETIRED LIST, ARMY AND NAVY: list of officers who have been retired from active service for causes prescribed by the govt. In the United States, retirement is compulsory, or voluntary, or special. In both army and navy, officers who have served 45 years continuously or have reached the age of 62 years are retired compulsorily by act of congress. In the army, an officer who has served 40 years, or 30 years continuously, or has lost a limb in the line of duty, or is incapacitated by wounds, sickness, or other cause arising from milit. service, may be retired on his own application. Special retirements are ordered by congress—viz., an officer of distinction who has resigned his commission may be restored to the active list and immediately retired, as an act of national gratitude for services rendered, or for the purpose of affording the officer an income for life. In the navy, officers are retired for in-

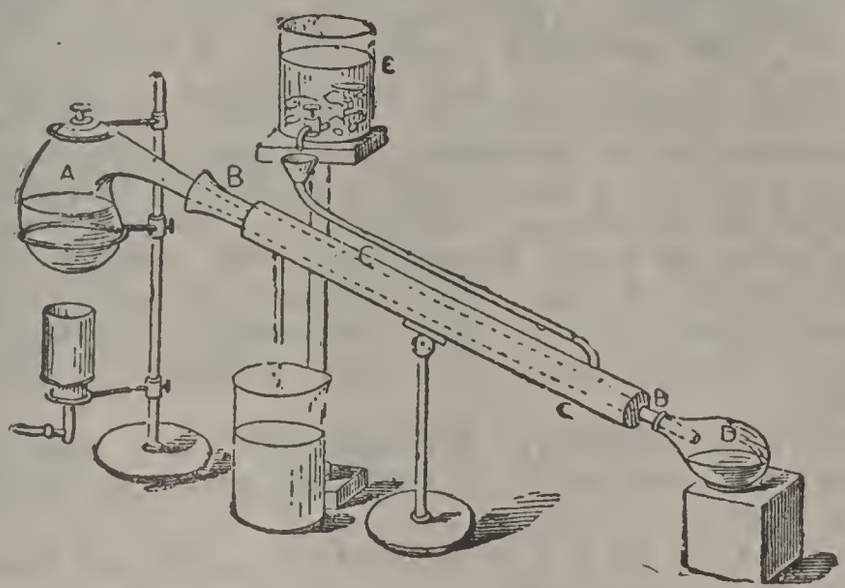
capacity resulting from long and faithful service, from wounds or injuries received in the line of duty, from sickness or exposure therein, or from other incident of service, on their application. All officers, in both arms of the service, receive retired pay, at the rate of 75 per cent. of the pay received at the time of retirement. In addition to this pay, retired army officers below the rank of brig.gen. (like those on the active list) receive an increase of 10 per cent. after 5 years' service, 20 per cent. after 10 years, 30 per cent. after 15 years, and 40 per cent. after 20 years; and certain naval officers retired on present rank receive the percentage of pay of the next highest rank. In establishing the grades of gen. and lieut.gen. in the army and of admiral and vice-admiral in the navy, congress provided that on retirement the incumbents should receive the full pay of the grades; and as a special compliment to John L. Worden, commander of the *Monitor* in her fight with the *Merrimac*, congress authorized his retirement on the full sea-pay of a rear-admiral. Retired officers of the army and navy are not again employed on active service in their respective branches, excepting in time of war, or under other special circumstances; but they are at liberty to hold civil offices under federal, state, and municipal govts., and draw both civil and retired pay. In 1890 there were 501 commissioned officers on the retired list of the army, and 395 (including 19 of the U. S. marine corps) on the list of the navy.—See PENSIONS AND PENSIONERS: DISCHARGE: SUPERANNUATION.

RETOLD: pp. of RETELL, which see.

RETORT, v. *rĕ-tôrt'* [L. *retortus*, twisted or bent back—from *re*, back or again; *torquĕō*, I twist]: to return or throw back, as in reply to an argument, an accusation, or an incivility; to make a severe reply: in *OE.*, to throw back; to rebound: N. the return of an argument, censure, or incivility: severe reply; repartee: round-shaped chemical vessel having a long bent neck; an iron or fire-clay cylinder in a gaswork for charging with coal to be converted into gas; a distilling apparatus (see below). RETORT'ING, imp.: N. act of throwing back in the way of censure or incivility. RETORT'ED, pp. RETORT'IVE, a. *-ĭv*, containing retort.

RETORT': vessel used by chemists for distilling or effecting decomposition by the aid of heat: it may be of glass, earthenware, or metal, according to its purpose. Glass retorts are most common, and their ordinary form is seen in the figure. They may be employed for such products as require no extraordinary degree of cold for condensation of their vapor—e.g., for production of hydrocyanic or nitric acid. The globular vessel in which the neck of the R. is inserted is from its function termed *the receiver*. Cold may be applied to the neck of the R.—for condensing the vapor—in various ways, as by a cold wet cloth, by a current of water, or by a special apparatus known as *Liebig's Condenser*. In the accom-

panying figure a *Liebig Condenser* is fitted on to the retort. A is the bulb of the R., into which the matter to be distilled is inserted. It can be opened or closed at the top by a ground-glass stopper. From the bulb



Liebig's Condenser.

the neck proceeds, and its termination is seen in the receiver, D. The condenser, BB, embraces the greater part of the neck of the R.: it consists of a glass tube, tapering from end to end, fixed in the centre of a metal pipe, provided with tubes, so arranged that a current of cold water may circulate through the apparatus. By putting a few pieces of ice into the little cistern, E, the temperature of this water may be kept at 32°, and extremely volatile liquids condensed.

The retort may be heated in various ways—as by a lamp beneath, or by placing its body in a sand-bath, or even in the fire; in the last case, the R. is usually protected by a coating of lute.

In ordinary cases requiring higher temperature than glass can bear, earthen retorts are used; for preparation of hydrofluoric acid, retorts of lead are employed; for preparation of strong. sulphuric acid, platinum is the best material for the R. Iron retorts are used in the laboratory for preparation of oxygen from black oxide of manganese, and some other processes; and in gas-works, for destructive distillation of coal.

RETOUCH, v. *rē-tŭch'* [*re*, again, and *touch:* F. *retoucher*, to retouch]: to improve, as a painting, by new touches; to go over a work of art a second time in order to restore a faded part, or to add portions for its general improvement: N. in *paint.* and *sculp.*, the finishing off, by some slight applications of the master's hands, of a completed work.

RETRACE, v. *rĕ-trās'* [*re*, back or again, and *trace:* F. *retracer*, to retrace]: to go back by the same path or course; to renew the defaced outline of a drawing. RETRA'CING, imp. RETRACED, pp. *rĕ-trāst'*.

RETRACT, v. *rĕ-trăkt'* [F. *rétracter,* to retract—from L. *retractus,* withdrawn—from *re,* back; *tractus,* drawn; *traho,* I draw: Sp. *retractar*]: to recall, as something said or declared; to take back; to withdraw; to unsay; to recant. RETRACT'ING, imp. RETRACT'ED, pp.: ADJ. in *bot.,* bent backward. RETRACTABLE or -IBLE, a. *rĕ-trăkt'a-bl* or *-ĭ-bl,* that may be withdrawn or recalled; retractile. RETRAC'TION, n. *-shŭn* [F.—L.], or RETRACTATION, n. *rē'trăk-tā'shŭn,* act of withdrawing something advanced; a withdrawal; a declaration of change of opinion; recantation. RETRACTILE, a. *rĕ-trăkt'ĭl* that may be drawn back. RETRACT'IVE, a. *-ĭv,* withdrawing; taking from: N. that which withdraws or takes from. RETRACT'IVELY, ad. *-lĭ.*—SYN. of 'retract': to abjure; disown; recant; disavow; recall; withdraw; revoke; unsay.

RETRANSFORM, v. *rē'trăns-fawrm'* [*re,* back or again, and *transform*]: to transform anew; to change back anew.

RETRANSLATE, v. *rē'trăns-lāt* [*re,* again, and *translate*]: to translate anew.

RETRAXIT, n. *rĕ-trăks'ĭt* [L. *retraxit,* he has withdrawn; *retrahĕrĕ,* to withdraw (see RETRACT)]: in *law,* the withdrawing or open renunciation of a suit in court by the plaintiff.

RETREAD, v. *rē-trĕd* [*re,* and *tread*]: to tread again.

RETREAT, v. *rĕ-trēt'* [F. *retraite,* retreat—from L. *retractus,* withdrawn—from *re,* back or again; *trahĕrĕ,* to draw]: to withdraw for safety or seclusion; to retire from any position or place; in *mil.,* to retire before an enemy (see below): N. act of retiring; retirement; seclusion; place of safety or privacy; the retiring of an army before an enemy, or from an advanced position; a military or naval signal either by drum or trumpet. RETREAT'ING, imp.: ADJ. moving in retreat; going back. RETREAT'ED, pp.—SYN. of 'retreat, n.': retirement; withdrawment; departure; solitude; seclusion; shelter; refuge; asylum.

RETREAT, SPIRITUAL, or RETREAT: in devotional language, a season of retirement from ordinary secular occupations and of prayer, of meditation upon the truths of religion and the duties of the Christian life, of examination of conscience, of serious consideration of one's spiritual state, etc. The exercises are arranged for a retreat of 4 weeks, but usually the time is abridged to 10 days or a week.

In *military language,* a retrograde movement, whether forced or strategical, by which troops retire before an enemy; it differs from a flight in being orderly and under control. An army in retreat must be covered by a powerful rear-guard, which from time to time must, if the enemy is pursuing, hold the pursuers at bay, while the artillery and the baggage pass defiles, cross streams or overcome any obstacles.

RETRENCH, v. *rē-trĕnsh'* [*re,* back or again, and *trench:* F. *retrancher,* to cut off]: to pare away; to render less or smaller; to abridge; curtail; to diminish expenses. RETRENCH'ING, imp. RETRENCHED', pp. *-trĕnsht'*. RETRENCH'MENT, n. *-mĕnt,* the act of lopping off or removing what is superfluous; a lessening; diminution of expenses.

RETRENCH'MENT, in Fortification: defensive work, comprising at least ditch and parapet within some other work of a fortress, and intended as a place of retreat for the defenders, whence they may prolong the defense, or capitulate after the faces of the work itself have fallen into the enemy's hands. The retrenchment resembles the *réduit,* except that it is almost always of earth. Retrenchments are made in ravelins, and the reentering *places d'armes* at the time of constructing those works. A retrenchment across the gorge of a redan or bastion, or from shoulder to shoulder, when it is apprehended that the salient angle will fall into the possession of the besiegers; these retrenchments are usually made when wanted.

RETRIBUTION, n. *rĕt'rĭ-bū'shŭn* [F. *rétribution;* Sp. *retribucion;* L. *retributĭōnem,* retribution—from *retrĭbūtus,* given back, restored—from *re,* back; *tribuĕrĕ,* to give or assign]: requital; retaliation; reward or punishment suitable to the action; the rewards or punishment of the final judgment. RETRIBUTER, n. *rĕ-trĭb'ū-tẽr,* one who makes retribution. RETRIB'UTIVE, a. *-tĭv,* rewarding or punishing according to action; repaying; also RETRIB'UTORY, a. *-tẽr-ĭ.* RETRIB'UTIVELY, ad. *-lĭ.*—SYN. of 'retribution': requital; retaliation; recompense; repayment.

RETRIBU'TION, in Anthropology and in Law: in anthropology the retribution theory expresses the belief in states of happiness or of misery in another world, allotted to men according to their deserts while living on earth. Tylor, *Primitive Culture,* does not find this idea existing universally in the religions of the lower range of culture that have not been affected by contact with higher religions. The most primitive view of the life beyond the grave was, he holds, that it is simply a continuation of the present: to this succeeds the belief that excellence, valor, social rank, etc., modify circumstances and surroundings in the next life; out of this, he believes, was finally developed a doctrine of future rewards and punishments.—In law, the theory of retribution, or retributive theory is, that punishment is inflicted in retribution for an offense, and ought to be similar to the misdeed: this is the principle of the retribution prescribed in the Hebrew law—'an eye for an eye, and a tooth for a tooth.' In modern legislation deterrence displaces retribution: it is held that no more punishment should be inflicted than suffices to deter others from committing the offense: even the death penalty is not defended on the principle of 'Life shall go for life,' but

because with abandoned criminals capital punishment has a more deterrent effect than has life imprisonment.

RETRIEVE, v. *rĕ-trēv'* [F. *retrouver*, to find again—from L. *re*, again; F. *trouver*, to find: It. *trovare*, to find]: to recover; to regain; to bring back from loss or injury to a former good state. RETRIEV'ING, imp. RETRIEVED, pp. *rĕ-trēvd'*. RETRIEV'ER, n. *-ẽr*, one who retrieves; a kind of sporting-dog (see below). RETRIEV'ABLE, a. *-a-bl*, that may be recovered or regained. RETRIEV'ABLY, ad. *-blĭ*. RETRIEV'ABLENESS, n. *-bl-nĕs*, the state of being retrievable. RETRIEV'AL, n. *-al*, or RETRIEVE'MENT, n. *-mĕnt*, act of retrieving.—SYN. of 'retrieve': to recover; recruit; repair; restore; regain.

RETRIEV'ER: dog trained specially to go in quest of game which a sportsman has shot, and particularly useful in fatiguing ground or in marshy places. The Retriever is generally cross-bred; the two recognized crosses being that between the Newfoundland and setter, which has the coat smooth and wavy, and that between the Newfoundland and water-spaniel, which has the coat curly. The favorite color is black. Spaniels, crosses of the terrier and spaniel, and terriers also are used as retrievers; and even fox-hounds, blood-hounds, and setters. The training requires much assiduity and patience, the dog being at first apt to be drawn from the proper quest by any water-rat or other creature that presents itself, also to bite the game too hard, injuring it. A thoroughly trained retriever therefore commands a high price.

RETRIM, v. *rĕ-trĭm'* [*re*, again and *trim*]: to trim again.

RETRO-, *rē'trō* or *rĕt'rō* [L.]: a prefix signifying 'backward; back.'

RETROACT, v. *rē'trō-ăkt'* [L. *retro*, back; *actus*, done or acted—from *agĕrĕ*, to do]: to act backward; to act on something past or preceding. RE'TROAC'TION, n. *-ăk'shŭn* [F.—L.]: action on something past or preceding. RE'TROAC'TIVE, a. *-ăk'tĭv* [F. *rétroactif*, acting on the past]: affecting what is past; retrospective.

RETROCEDE, v. *rē'trō-sēd'* [F. *rétrocéder*, in *law*, to make over again—from L. *retro*, back; *cedĕrĕ*, to go or move: It. *retrocedere*, to retrocede]: to go back; to cede or grant back. RE'TROCE'DING, imp. RE'TROCE'DED, pp. RE'TROCE'DENT, a. *-sē'dĕnt*, in *med.*, applied to diseases which move from one part of the body to another, as gout.

RETROCESS, v. *rē'trō-sĕs'* [L. *retro*, back; *cessus*, gone or moved; *cedĕrĕ*, to move: F. *rétrocéder*, in *law*, to make over again]: in *Scots law*, to reinvest a man in an estate again by a reconveyance. RETROCES'SING, RE'TROCESSED', pp. *-sĕst'*. RETROCESSION, n. *rē'trŏ-sĕsh'ŭn* [F. *rétrocession*, reconveyance]: a moving backward; in *Scots law*, the act of reconveying an estate to a former owner.

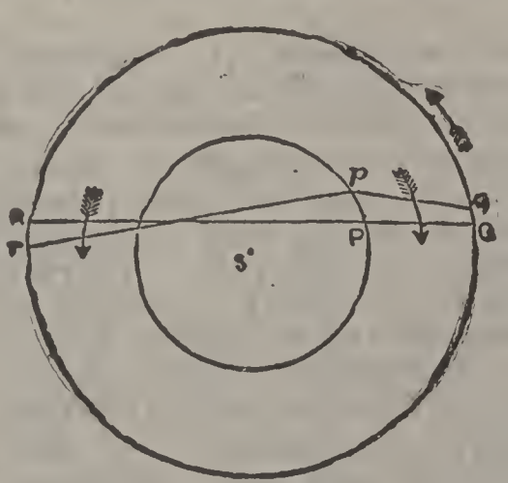
RETRODUCTION, n. *rē′trō-dŭk′shŭn* [L. *retro*, back; *ductus*, led; *ducĕrĕ*, to lead]: a leading or bringing back.

RETROFLEX, a. *rē′trō-flĕks* [L. *retro*, backward; *flexus*, bent; *flecto*, I bend]: bent backward; in *bot.*, bent this way and that.

RETROFRACT, a. *rē′trō-frăkt′*, or RE′TROFRACT′ED, a. [L. *retro*, backward; *fractus*, broken; *frangĕrĕ*, to break]: in *bot.*, bent backward, and appearing as if broken.

RETROGRADE, a. *rē′trō-grād* or *rĕt′rō-grād* [F. *rétrograde*—from L. *retrōgrădi*, to retrograde—from *retro*, backward; *grădus*, a step: It. *retrogrado*]: going or moving backward; apparently moving from e. to w., as a planet; declining from a better to a worse state; in *bot.*, applied to hairs when they are bent back or down; in *OE.*, contrary; opposite: V. to go or move backward. RE′TROGRA′DING, imp. RE′TROGRA′DED, pp. RE′TROGRADA′TION, n. *-dā′shŭn* [F.—L.]: the act of going or moving backward.—*Retrograde* is a term applied to the motion of the planets and comets among the fixed stars, when they appear to move in the *reverse* order of the signs of the Zodiac (q.v.). All the planets move in the same direction round the sun; therefore their R. motions must be due to their motion relative to the earth. In comets, however, we have instances of motion about the sun in the opposite direction to that of the planets; and in such orbits the motion (referred now to the sun, not to the earth) is said to be retrograde.

In the case of the planets, which is thus the only one that we need consider, let S be the sun, and let the two circles represent the orbits of two planets. First, let the planets be, as at P and Q, toward the same side of



the sun. The inferior planet has of course the greater velocity; therefore, if *p* and *q* represent their positions after the lapse of a given time (second, hour, day, etc.), P*p* is greater than Q*q*, and therefore the *direction* of the line *pq* (in which one is seen from the other) has rotated in the *opposite* direction to that in which either planet revolves about the sun. Hence, when a superior planet

is in opposition (i.e., if Q be Jupiter, and P the earth), it *appears* to move backward among the stars. When an inferior planet is between the earth and sun (i.e., if Q be the earth, and P Venus), it *appears* to move backward also. If the planets be on opposite sides of the sun, as at P and R in the figure, let *p* and *r* be their positions after a given time; then *pr* has turned from the direction PR in the direction in which the planets revolve about the sun. Hence any planet, superior or inferior, appears to move *directly* when the sun is between it and the earth. Between these two opposite cases, there must, of course, be points at which the apparent motion is neither retrograde nor direct—then the planet is said to be *stationary*. This case occurs whenever, for an instant, the lines PQ and *pq* are parallel; that is, when the two planets are moving with equal velocities transverse to the line joining them, these velocities being parallel, and toward the same side of the joining line.

RETROGRESSION, n. *rĕ'trŏ-grĕsh'ŭn* [L. *retrogressus*, gone back or backward—from *retro*, backward; *gressus*, a stepping (see RETROGRADE)]: the act of going backward. RE'TROGRES'SIVE, a. *-grĕs'sĭv*, moving backward: declining from a better to a worse state. RE'TROGRES'SIVELY, ad. *-lĭ*.

RETROMINGENT, a. *rĕ'trō-mĭn'jĕnt* [L. *retro*, backward; *mingens* or *mingen'tem*, discharging urine]: discharging the urine backward: N. an animal that discharges its urine backward. RE'TROMIN'GENTLY, ad. *-lĭ*. RE'TROMIN'GENCY, n. *-jĕn-sĭ*, the act or quality of being retromingent.

RETROPULSIVE, a. *rĕ'trō-pŭl'sĭv* [L. *retro*, backward; *pulsus*, driven—from *pellĕrĕ*, to drive]: driving back; repelling.

RETRORSE, a. *rĕ-trôrs'* [L. *retrorsum*, backward—from *retro*, backward; *versus*, turned—from *vertĕrĕ*, to turn]: turned backward. RETRORSE'LY, ad. *-lĭ*.

RETROSPECT, n. *rĕ'trō-spĕkt* [L. *retrospec'tus*, looked backward at—from *retro*, backward; *spectūs*, looked at; *specĭō*, I look]: a looking back on things past; review or contemplation of the past. RE'TROSPEC'TION, n. *-spĕk'shŭn*, the act or faculty of looking back on things past. RE'TROSPEC'TIVE, a. *-spĕk'tĭv*, having reference to what is past. RE'TROSPEC'TIVELY, ad. *-lĭ*.—SYN. of 'retrospect': survey; re-examination; review.

RETROVERT, v. *rĕ'trō-vĕrt'* [L. *retro*, backward; *vertĕrĕ*, to turn]: to turn back. RE'TROVERT'ING, imp. RE'TROVERT'ED, pp.: ADJ. turned back. RE'TROVER'SION, n. *-shŭn* [L. *versus*, turned]: a turning or falling backward.

RETTERY, RETTING: see under RET.

RETURN, v. *rĕ-tėrn'* [*re*, again, and *turn*: F. *retourner*, to return: It. *ritornare*, to return or go back]: to come or go back to the same place; after a periodical revolution, to commence again; to go back to the same state; to revert; to retort; to come again; to bring or send back; to give back; to reply or make answer; to render an official account; to restore; to render: N. the act of coming, going, or sending back to the same place; act of putting in the same place; the act of coming back to a former state or condition; repayment; profit; requital; an official report. RETURN'ING, imp. RETURNED, pp. *rĕ-tėrnd.* RETURN'ER, n. *-ėr*, one who returns. RETURN'ABLE, a. *-a-bl*, that may be restored; legally to be returned, given, or rendered. RETURNS, n. plu. *rĕ-tėrnz'*, statistics in a tabulated form issued by government for general information; profits or receipts in business; the figures or state of the poll at an electio n. RETURN CHAISE, a carriage going back empty from a post-station. RETURN DAYS, in a *court of law*, certain days on which writs are returnable, and on which defendants must appear in court. RETURN TICKET, a ticket for a railway or other journey and back. RETURNING OFFICER, the presiding officer at an election who returns the persons duly elected.—SYN. of 'return, v.': to go back; come back; come again; revisit; repay; transmit; restore; requite; recompense; remit; render;—of 'return, n.': retrogression; revolution; repayment; profit; advantage; remittance; retribution; requital; restitution; relapse; report; account.

RETUSE, a. *rĕ-tūs'* [L. *retūsus*, blunted—from *re*, back; *tundĕrĕ*, to beat]: in *bot.*, having the extremity broad, blunt, and slightly depressed; appearing as if bitten off at the end.

RETZ, *rĕts*, JEAN FRANÇOIS PAUL DE GONDI, Cardinal DE: 1614–1679, Aug. 24; b. Montmirail, France. He was taught by St. Vincent de Paul, who endeavored to fit him for the priesthood, though he seemed to have neither the inclination nor the moral qualification for such a career. He was offered a bishopric by Louis XIII.; but did not secure the object of his ambition, that of coadjutor to his uncle Henri de Gondi, abp. of Paris, with the prospect of succession, till the death of the king. By his eloquence and apparent sympathy with the people, he became very popular. He was, practically, the leader of the revolt against Mazarin, and for several years was prominent in political affairs, being noted for both cunning and boldness. Through misapprehension on the part of the pope, he was made a cardinal 1651, the following year was imprisoned, escaped two years later, lived a while in Spain and later in Italy, was allowed to return to France 1661, but was required to resign the archbishopric, though he was given in exchange a rich abbacy and other inducements. He then retired from political life and gave many years to the work of paying his enormous debts. His *Memoirs*

which he left in MS., have appeared in various editions, and the first two vols. of his collected works were published 1872. He died at Paris.

RETZSCH, *rĕtsh*, FRIEDRICH AUGUST MORITZ: German painter and engraver: 1779, Dec. 9—1857, July 11; b. Dresden. He studied at the acad. of his native city, where he became a prof. 1824. He acquired celebrity by his illustrations in outline of the great German poets, Schiller, Goethe, etc.—those of Goethe's *Faust* particularly being well known, not only in his own country, but also in France and England. His illustrations of Fouqué's charming romances, *Undine* and *Sintram*, are singularly beautiful. R. executed several fine works on subjects from classical mythology, e.g., *The Child Bacchus Asleep on a Panther*, *Diana*, *Love and Psyche Embracing in the Clouds*, *A Satyr and Nymph*, *The Four Epochs of Human Life*, etc. Among his other works of conspicuous merit are—*The Struggle of Light and Darkness*, *The Chess-Players*, and *Fantasies*. R. ranks as one of the most original, thoughtful, and vigorous artists of modern Germany. His works evince a strong, inventive, and cultured imagination, whose efforts at expression never degenerated into sentimentalism. As miniature oil-painter, also, he was very successful.

REUCHLIN, *roych'lin*, JOHANN; known also by his Grecized name CAPNIO: one of the first and most active promoters of Hebrew studies in Germany, whose labors and struggles aided greatly in bringing the Reformation: 1455, Dec. 28—1522, June 30; b. Pforzheim, in Baden. He received his earliest education at Schlettstadt; and 1473, as travelling companion to Prince Friedrich of Baden, visited Paris, and studied Greek under Hermonymus of Sparta, besides assiduously practicing Latin composition. Two years later, at Basel, he continued Greek study, and wrote his Latin dictionary, *Vocabularius Latinus Breviloquus Dictus* (Basel 1478). He studied law at Orleans, France (1479), and fought at Poitiers (1480); then returned to Germany, married, and became at Tübingen teacher of jurisprudence and literature. In 1492 he was raised to the rank of a count of the German empire, and about the same time began the study of Hebrew under a learned Jew. In 1496, at Heidelberg, he wrote a satirical comedy, *Sergius, sine Capitis Caput*, against the unworthy Augustinian monk Holzinger, who had been made chancellor of Würtemberg. In 1498 he was sent to Rome by Philip the Elector-palatine, and there made wonderful proficiency in Hebrew and Greek. R. returned to Würtemberg 1499. In 1506 appeared his *Rudimenta Linguæ Hebraicæ*, a work of which he was justly proud, as made 'without any foreign help,' and as 'the first attempt to execute a grammar of the Hebrew tongue' (see his preface). His Hebraic studies, which embraced the post-biblical Jewish literature, were—in their consequences—the most important of his life, drawing him into bitter strife

with learned Jews, Jewish proselytes, and the Dominicans, and directly and powerfully helping on the Reformation. In 1510 the struggle between Light and Darkness, as the Germans regard it, broke out. In that year, Johann Pfefferkorn, a Jewish proselyte, in the true spirit of a renegade, called on princes and subjects to persecute the religion of his fathers, and especially urged the emperor to burn or confiscate all Jewish books except the Bible. R. remonstrated, maintaining that no Jewish books should be destroyed except those directly attacking Christianity. This tolerant attitude drew the enmity of the Dominicans, particularly the inquisitor Jakob van Hoogstraten. These enemies of R. held possession of the universities of Paris, Louvain, Erfurt, and Mainz; but all the distinguished and independent thinkers in Germany were on the side of the brave and humane scholar. Among the *Reuchlinists*, as they were termed, were Ulrich von Hutten (q.v.) and Franz von Sickingen (q.v.); to the first of whom (in conjunction with Rubeanus, etc.) we owe *Epistolæ Obscurorum Virorum* (q.v.); and to the second of whom R. owed his safety, for Von Sickingen threatened (1519) Hoogstraten and his monks with terrible vengeance if they did not cease to persecute 'his teacher, Doctor Reuchlin.' When the Reformation was inaugurated by the burning of the papal bull (1517), R. instinctively felt that a crisis had come, and exulted in the heroism of Luther. 'God be praised!' he said: 'we have now got a man who will give them [the monks] mighty hard work.' Luther, in a letter to R. (1518), tells him that he had longed to take part with him in his noble struggle, but had never found an opportunity. But the scholar's troubles were not at an end. A quarrel broke out between Ulrich, Duke of Würtemberg, and the Swabian League, in the course of which R. became a prisoner of Duke Wilhelm of Bavaria, who, however, generously restored him his freedom, and 1520 appointed him prof. at the Univ. of Ingolstadt. While here, he received a call to Würtemberg, which he declined, but sent Philip Melanchthon in his stead. In 1522 the plague broke out at Ingolstadt, and R. again withdrew to Tübingen, to devote himself to learned studies, but soon afterward died at Stuttgart. R.'s life has been written by Gehres, Meyerhoff, and Geiger.

REUNION, n. *rē-ūn'yŭn* [F. *réunion*, return to a state of union after separation or discord—from *re*, back or again; *union*, union—from mid. L. *uniōnem*, unity—from L. *unus*, one: Sp. *reunion*, reunion]: cohesion of parts after separation, as the lips of a wound; an assembly of familiar friends or associates.

RÉUNION, Ile de la, *ēl dėh lâ rā-ū-nē-ōng':* official name after the French Revolution of 1789 and since that of 1848 for the island Ile de Bourbon (see Bourbon, Ile de). The latter name was used before 1789, and 1814–48; and *Ile de Bonaparte* was the name 1809–14.

REUNITE, v. *rē′ū-nīt′* [*re*, again, and *unite*] : to join after separation ; to reconcile ; to become united again. RE′UNI′TING, imp. RE′UNI′TED, pp. : ADJ. reconciled.

REURGE, v. *rē-ėrj′* [*re*, again, and *urge*] : to urge again.

REUS, *rā′ôs :* manufacturing town of Spain, province of Tarragona ; about 5 m. from the seaport of Salou. The modern portion consists of wide plazas and streets. The prosperity of R. dates from about 1750, when a number of English merchants settled there. R. contains 80 establishments for cotton-spinning alone, 5,000 looms, and many silk-ribbon factories, and manufactures soap, brandy, casks, and machinery. Pop. 26,221.

REUSS, *royss :* name of two sovereign principalities (R.-GREIZ, *-grīts*, and R.-SCHLEIZ, *-shlīts*) of Germany, between the kingdom of Saxony and the Prussian duchy of that name ; separated from each other by the circle of Neustadt, an outlying portion of the grand-duchy of Saxe-Weimar. Since 1616 the possessions of the House of R. have been divided between the elder and the younger lines.—The principality of R.-Greiz (the elder line) has 123 sq. m. : chief town and seat of govt. Greiz (q.v.).—The principality of R.-Schleiz (the younger line) has 320 sq. m. : cap. Schleiz (q.v.).—Of both principalities the surface is hilly, traversed by the Frankenwald, whose chief summits are above 2,000 ft. in height. The chief rivers are the Saale and the Elster, whose valleys are extensive and well cultivated. Large tracts are covered with forests and in pasture ; and cattle and timber are exported. By the constitution of 1867, R.-Greiz obtained much needed reforms. The existing constitutional form of govt. in R.-Schleiz dates from 1852. The pop. in both states is almost wholly Prot., and is industrially prosperous. Pop. (1900) R.-Greiz 68,396; R.-Schleiz 139,210.

REUSS, EDUARD WILHELM EUGEN, D.D., LL.D., PH.D. : theologian : 1804, July 18—1891, May 1 ; b. Strasburg. He studied philology in his native city, theology at Göttingen and Halle, and oriental literature under De Sacy at Paris. He commenced teaching in the theol. school at Strasburg 1828, became prof. extraordinary 1834, and was prof. from 1836 till his death. He favored the liberal German methods of criticism and investigation, was a voluminous writer, and did much to popularize the study of the Bible in France. Some of his books have been translated into various languages. Among his works were a *History of the Books of the New Testament ; Christian Theology in the Apostolical Century ; History of the Canon of the Holy Scriptures in the Christian Church* (1872) ; and *The Epistles of Paul* (1883). He also translated the Bible into French, with notes (17 vols.) ; and with Professors Baum and Cunitz attempted a complete edition of the works of Calvin, of which 44 vols. have been published. He died at Strasburg.

REUSSITE, n. *roys'īt*, or REUSSIN, n. *roys'ĭn* [after *Reuss*, an Austrian mineralogist]: a hydrous sulphate of soda and magnesia, occurring in white, flat, six-sided crystals.

REUTER, *roy'tėr*, FRITZ: novelist and poet who wrote in the Plattdeutsch or Low-German dialect: 1810, Nov. 7—1874, July 12; b. Stavenhagen, in Mecklenburg. While studying law at Jena, he became involved in the revolutionary aims of the students' association, the *Burschenschaft*, was sentenced to death 1833, but suffered instead seven years' imprisonment in Prussian fortresses. His numerous writings give a vivid picture of the distinctive manners and customs of the Low-German country: the best known are *Olle Kamellen* and *Ut Mine Stromtid*.

REU'TER, PAUL JULIUS, Baron: well known from the familiar newspaper heading 'Reuter's Telegrams'; b. at Cassel, 1818. He early became a telegraphist. In Aix-la-Chapelle he gradually formed an organization for collecting and transmitting telegraphic news; and 1851, having become a naturalized Brit. subject, transferred his headquarters to London. As telegraphs extended throughout the world, his system multiplied its ramifications, and newspapers gained in copiousness and freshness of news. In 1865 R. made over his business to a limited liability company; 1871 became a German baron; 1872, obtained from the shah of Persia the exclusive privilege of making all railways of Persia and working all mines and forests; 1889 this concession was annulled, and he received instead that of the imperial bank of Persia. D. 1899, Feb. 25.

REUTLINGEN, *royt'lĭng-ėn*: town of Würtemberg, in a beautiful district, fertile in fruit and wine, on the Eschatz, feeder of the Neckar, 20 m. s. of Stuttgart. Its houses are old and picturesque; and it was formerly surrounded by walls and moats, whose site is now occupied by streets. The Church of St. Mary, completed 1345, surmounted by a pierced tower 325 ft. high, which is considered the most beautiful in the kingdom, is a noble Gothic edifice. Woolen and cotton yarns are spun, and cloth, leather cutlery, hosiery, etc., are manufactured. Pop. (1885) 17,319; (1890) 18,542; (1900) 21,494.

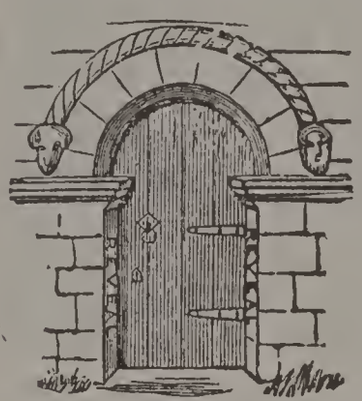
REVACCINATE, v. *rē-văk'sĭn-āt* [*re*, again, and *vaccinate*]: to vaccinate a second time. REVAC'CINA'TION, n. *-ā'shŭn*, repetition of vaccination.

REVALENTA ARABICA, *rĕv-a-lĕn'ta ăr-ăb'ĭ-ka*: empirical diet for invalids, to which extraordinary restorative virtues are attributed. It is only a preparation of the common lentil, its first name being formed for disguise from its botanical name, *Ervum Lens* (see ERVALENTA): its real value is about equal to good pea-meal.

REVALUE, v. *rē-văl'ū* [*re*, again, and *value*]: to value a second time. REVAL'UA'TION, n. a second valuation.

REVEAL, v. *rĕ-vēl′* [F. *révéler*, to reveal—from L. *revēlārĕ*, to uncover—from *re*, back; *vēlo*, I cover or veil; *vĕlum*, a veil: It. *rivelare*]: to uncover; to lay bare or open; to make known something before concealed; in a special sense, to make known from God. REVEAL′ING, imp. REVEALED, pp. *rĕ-vēld′*: ADJ. disclosed; made known. REVEAL′ER, n. *-ẽr*, one who reveals. REVEAL′ABLE, a. *-a-bl*, that can be revealed. REVEAL′ABLY, ad. *-blĭ*. REVEAL′ABLENESS, n. *-bl-nĕs*, the state of being revealable. REVELATION, n. *rĕv′ĕ-lā′shŭn* [F.—L.]: the act of disclosing to others what was formerly unknown to them; that which is revealed. REVELATION, n. the communication of truth by God to men; the revealed truth itself (see below): usual name for the Apocalypse (see REVELATION OF JOHN, THE).—SYN. of 'reveal': to disclose; uncover; divulge; unveil; discover; open; impart; show; communicate.

REVEALS, n. plu. *rĕ-vēlz′* [L. *revellĕrĕ*, to pull or tear out—from *re*, back; *vello*, I pluck or pull]: vertical sides of the aperture for a window-frame, a door-frame, etc., between the face of the wall and the framing, etc.: spelt also REVELS′, n. plu. *-vĕlz′*. The word is used sometimes in the singular form.



Reveal.
(Norman Doorway, Filwell, Oxfordshire, 1150.)

RÉVEILLAUD, *rā-vā-yō′*, EUGENE: religious reformer: b. France. His parents were Roman Catholics, and his mother was anxious that he should enter the priesthood; but his disinclination to this was so great that he was allowed to study law. He was a brilliant scholar at the national schools, and took high rank among his classmates. After graduation he became connected with some important provincial papers, in which he treated public questions with great freedom and ability. He soon became convinced that the great need of France was religion, and that the Rom. Cath. faith was not adapted to the wants of the state. At this time he was a freethinker; but he boldly declared his belief that to the lack of a proper faith was to be traced the failure of the French Revolution. He wrote a volume advocating Prot. doctrines, not, as he plainly avowed, for their religious bearings, but merely for their influence on the social and political life. He afterward became a believer in Christianity in its personal relations, and endeavored to disseminate its principles. He is an eloquent speaker, and excited great interest by his lectures in the large cities of France; and 1880 visited the United States, where he had large and appreciative audiences.

REVEILLE, n. *rĕ-vĕl′yā*—frequently in the U. S. service *rĕv-ĕl-ē′* [F. *réveiller*, to awake—from *re*, again; *éveiller*, to wake—from L. *ex*, out; *vigilārĕ*, to watch; *vigil*, wakeful]: in *mil.*, the beat of drums or sound of trumpet at daybreak to announce to the troops that the night is past—after which the sentries do not challenge.

REVEL, n. *rĕv′ĕl* [Swiss, *räbeln*, to make a disturbance: Bret. *ribla*, to revel: prov. F. *revel*, gayety, disturbance: Dut. *ravelen*, to be excited, to be restless: *revel* is derived by some from L. *rebellārĕ*, to rebel (see REBEL)]: a feast with loose and noisy jollity; a carouse; a riotous banquet: V. to feast with loose and noisy merriment; to enjoy with a feeling of unbounded freedom; to carouse. REV′ELLING, imp.: N. a feasting with noisy merriment; enjoyment under the feeling of unbounded freedom. REV′ELLED, pp. *-ĕld*. REV′ELLER, n. *-ĕl-ĕr*, one who revels. REV′ELRY, n. *-rĭ*, loose and noisy festivity; playful jollity. REVEL-ROUT, n. *-rowt*, a mob or rabble engaged in tumultuous festivity.

REVEL, *rĕv′ĕl*, or REVAL, *rĕv′ăl:* Russian seaport, cap. of Esthonia, on the small bay of R., 238 m. w.s.w. of St. Petersburg. It is divided into the upper and lower towns, which till 1878 had separate administrations. The upper, on a rocky ridge, contains the cathedral, the castle, gymnasium, gov.'s residence, and the houses of the nobility. The lower town extends to the sandy shore of the harbor. Till lately R. was a fortress of the first rank. The people are mostly of German extraction. It was long held by the Lithuanian Order of Knights; was made over to Sweden 1562; bombarded by the Danish and Lübeck fleets 1569; and besieged by Peter the Great, and annexed to the Russian empire 1710. In 1713, a naval harbor was begun. The chief exports are flax, linseed, rye, skins, corn, and potato-brandy, supplied by land from the govts. of Esthonia, Pskov, and Livonia. The chief imports are salt, fruits, wine, and manufactured and colonial goods. Pop. about 64,600.

REVELA′TION [see REVEAL]: theological term commonly applied to the knowledge of the Living God which He has given man in Holy Scripture. Of this knowledge concerning God, the center is Jesus the Christ; the originating and the communicating power is the Holy Spirit; the basis or field taken for its development in human history is the experience into which certain chosen men in various ages have been led concerning God; and the agents or media for its historical record are the selected and inspired writers of the Old and New Test.—In itself, however, the word R. is properly, and of late years has been frequently used, not only of the divine knowledge communicated in Scripture, but of all divine knowledge communicated to man through whatever channel. Conscience and reason are in themselves modes of Divine R. so far as they witness of the divine laws which bind man's moral life,

and only in harmony with which can the health and happiness of that life be found. History also is a species of R., unfolding, as it does, the same divine laws collectively in the race. Nature, too, originating from God, reveals His power, wisdom, and goodness; and science, the interpreter of nature, so far as it makes known the great laws governing the material universe, truly makes known to us the divine will. But since all these other means of common R. have been historically found insufficient for man without the written word, the idea of R. is to be associated centrally and eminently with the Scriptures. They are in a special sense the medium of divine R. to the human race: God has made known therein more fully and clearly than elsewhere His will and character. They are the key to all other revelations of God. But we must not confound R., in its fact and essence, with the books of Scripture. These books are only the highest or most distinguished form or *medium* of R., which, in itself and essentially must always imply communication *from one mind to another;* and, in a religious sense, from the divine to the human mind. Scripture is, in its several books, the pre-eminent medium of this contact or interchange of the divine and human, inasmuch as it registers the growing manifestation of God in Christ from the creation onward in human history. It is the record of special communications which God made in time past to holy men, 'who spake as they were moved by the Holy Spirit,' which, when duly taken by a receptive mind, *constitutes* a R.—we may well say *the* R.—for us; yet the R. is not the mere record, but the knowledge which the record conveys to our minds.—See BIBLE: BIBLE, THE: INSPIRATION OF THE BIBLE.

REVELA'TION OF JOHN, THE (*Apokálypsis Iōannou*): last book of the New Test. It professes to be the production of John, traditionally known as 'The Divine' (*ho theológos*). It has been a subject of dispute, however, whether John, writer of this book, is the beloved apostle, writer of the fourth gospel and of the three Epistles. Evidence and authority seem strongly to favor the view that he is the same; though some distinguished names—Luther in the past, and Lücke among modern critics—have adopted the negative view. The author's simple mention of himself by his name John; his description of himself as one 'who bare record of the word of God, and of the testimony of Jesus Christ, and of all things that he saw,' is held to indicate strongly his identity with the author of the gospel, who speaks of himself in similar language (John xix. 35). He writes from the Isle of Patmos, and the apostle is the only John distinctly named in early Christian history as an exile in Patmos. The authority, moreover, with which the writer addresses the seven churches in Asia is such as seems to pertain only to an apostle. So far as historical testimony is concerned, the authority of the early Christian Fathers—e.g., Justin Martyr,

Theophilus of Antioch, and Irenæus, and Clement of Alexandria—all point to the Apostle John as the author of the R. The date of the book is supposed to be the very close of the 1st c., 95–97, at the end of the reign of Domitian. We cannot here particularize the contents of the book, nor can we enter into any detailed statement of the various interpretations which have been given of it. It has been the subject of very conflicting commentary. It has been stated that 'not less than 80 systematic commentaries are worthy of note, and that the less valuable writings on the subject are unnumbered, if not innumerable.' All that we can do here is to characterize the different general schools, into which the interpreters of this sublime and mysterious book may be arranged. Nearly all these schools are sub-divided according to minor variations.—1. The Præterist School of interpreters consider the Revelation as fulfilled in the past, especially in the great conflicts of Christianity with Judaism and Paganism, and its triumph over them in the ages following the time in which it was written; to this class of interpreters belong, among others, Grotius, Hammond, Bossuet, Calmet, Eichhorn, Ewald, Lücke, De Wette, Stuart, Lee, Maurice. 2. The *Futurist* School regard the book, except the first three chapters, as referring to events yet to come; this view has been advocated, in modern times, by such writers as Dr. J. H. Todd, Dr. S. R. Maitland, Newton, and many others. 3. What has been called the Historical and Continuous School of expositors, who regard the R. as a progressive symbolic history of the vicissitudes of the church from the 1st c. to the end of time. To this school of interpreters belong a host of eminent names, such as Mede, Sir I. Newton, Vitringa, Bengel, Faber, Elliot, Wordsworth, Alford, Hengstenberg, Ebrard, and others. 4. Another school of expositors are not disposed to allow any exact prophetical character to the book, but simply to regard it as a species of grand and inspiring symbolical poem, setting forth the eternally-recurring principles of the divine govt. The real fulfilment of the R. therefore, is sought by these interpreters not in any definite historical events, but in the vindication of these principles shadowed forth more or less in great historical crises, yet transcending all partial historical results. According to this view, the lofty symbolic imagery of the R. has never found and will never find its exact counterpart in any earthly facts; but it finds its spiritual counterpart constantly in the career of the church—the unceasing conflict of truth with error, of righteousness with sin, of life with death, of the kingdom of God with the kingdom of evil, and will attain its true realization only at the sure and final triumph of the Son of God over all the power of sin and death.

REVELS: see REVEALS.

REV'ELS, Master of the; or Lord of Misrule: officer, who, in England, was attached to royal and other distinguished houses, whose function it was to preside over the amusements of the court, or of the nobleman to whose house he was attached, during the 12 Christmas holidays. This officer, sometimes called *Master of the Tents and Revels*, became a permanent appendage to the English court in the reign of Henry VIII; and his duties included the keeping the tents and pavilions which accompanied the sovereign on a royal progress, as also the keeping the dresses and masks used in entertainments given at court, and the providing of new ones as required. In Queen Elizabeth's time, we find the Mastership of the Revels divided into several distinct offices. The office continued till the reign of George III., when it was abolished.—See Christmas: Fools, Feast of: Boy-bishop.

REVENGE, n. *rĕ-vĕnj'* [F. *revanche*, requital, revenge: OF. *révenger*, to revenge: L. *re*, back or again; *vindĭcārĕ*, to make a claim upon—from *vindex* or *vindĭcem*, a claimant, an avenger]: a malicious or spiteful infliction of injury in return for an injury; the passion for retaliation excited by an injury or an affront: V. to inflict pain or injury maliciously in return for injury done, or an affront received; to punish in return—an injury is *revenged*, a crime *avenged*. Reven'ging, imp. Revenged', pp. *-vĕnjd'*. Reven'ger, n. *-jĕr*, one who revenges. Revenge'ful, a. *-fûl*, vindictive; prone to revenge. Revenge'fully, ad. *-lĭ*. Revenge'fulness, n. *-nĕs*, the state of being revengeful. Reven'gingly, ad. *-lĭ*. Revenge'ment, in *OE.*, revenge; vengeance.—Syn. of 'revengeful': vindictive; vengeful; resentful; spiteful; malicious.

REVENUE, n. *rĕv'ĕn-ū* [F. *revenu*, revenue—from *revenir*, to return—from L. *re*, back or again; *venīrĕ*, to come]: annual income from rents, etc.; the public income of a state derived from taxes, etc. REVENUE-CUTTER, an armed vessel employed by the custom-house authorities to suppress smuggling. REVENUE-OFFICER, an officer in the service of the customs; an exciseman. —See REVENUE, PUBLIC.

REV'ENUE, PUBLIC: public income of a state, derived from taxes, etc. A state has a right to reserve part of the property of the citizens, or of the produce of the country, or to exact contributions from the citizens, to supply the expense of carrying on the govt. It is entitled also to augment the riches of the state by taxing merchandise imported into or exported from the country, and by taking a small proportion of the things consumed. In England, the crown is dependent on supplies voted by parliament for its ordinary support and existence. The popular voice, in the matter of taxation, was admitted as early as the reign of Edward I., an act of that monarch declaring 'that no tallage or aid shall be taken or levied without the goodwill and assent of the archbishops, bishops, earls, barons, knights, burgesses, and other freemen of the land.' The laity were thenceforth taxed by the votes of their representatives. The lords spiritual and temporal voted separate supplies for themselves; and from the reign of Edward I., the clergy, as a body, granted subsidies, either as a national council of the clergy, in connection with parliament, or, at a later period, in convocation, till the disuse of this right in the reign of Charles I. As the commons increased in political importance, the subsidies voted by them became the principal sources of revenue, and they gradually assumed their present position in regard to taxation and supply, including the lords as well as themselves in their grants. Concurrently with parliamentary taxation, imposts were formerly levied by royal prerogative alone; but none of these survived the revolution of 1688. A grant by the commons is not effectual without the ultimate assent of the king and house of lords; the lords, however, cannot alter a bill of supply, though they may refuse their assent to it. The aggregate of the different sources of revenue is paid into a fund called the 'Consolidated Fund,' which is chargeable with the interest of the national debt, and is mortgaged to raise an annual sum for the maintenance of the royal household and Civil List (q.v.).

In the United States the national government derives its revenue chiefly from tariff duties, and internal taxes on alcoholic liquors and tobacco. The revenues of the various States and municipalities are mainly from taxes on land and buildings, and personal property. New York and some other States have an inheritance tax which

brings in large returns, so that the New York State government is supported almost without direct taxation.

REVENUE CUTTER SERVICE, UNITED STATES: under the provisions of Section 2752, Revised Statutes, is purely a technical service, in that no person not trained in the technical profession of the sea can hold a commission in its ranks, and under regulations prescribed in conformity with the law referred to, all officers are required to pass rigid professional examinations for entrance and promotion.

The commissions of its officers are of the same (life) tenure as those of officers of the army, navy, and marine corps. Officers enter this, as they do the services named, in the lowest grades and work their way, by promotion, through long years of service (after examination, mental and physical) to the highest.

The revenue cutter service has always been regarded and treated as a part of the military force of the country. Its vessels are armed cruisers, officered by men bearing the commissions (under military titles, captains, lieutenants, chief engineers, etc.) of the President, by and with the advice and consent of the Senate, and manned by duly enlisted men; its officers and men are uniformed in accordance with the regulations prescribed by the department; naval discipline and routine prevail on board of all its ships; the officers and crew are required to be proficient in naval drills, and to possess a practical knowledge of the use of arms. The service is required by law not only to aid in the protection of the revenue, but to enforce nearly every statute affecting the maritime interests of the country. By acts of Congress the service is required to aid in the enforcement of the quarantine laws, and in preventing the violation of the neutrality laws; to suppress mutinies on board merchant vessels, and to use the armament of their ships and the force on board.

Under the definite provisions of the Act approved 1902, April 12, all officers of this service are invested with military rank, and are placed upon the same level with officers of the army as to pay and allowances, increase of pay for length of service, retirement on account of physical disability, or upon reaching the age of 64 years.

By law (Section 2757, Revised Statutes) the President may, by a simple order, require the service, or any part of it, to co-operate with the navy, when it at once becomes part and parcel of the naval force of the country, and passes from the jurisdiction of the Treasury Department to the control of the Navy Department. The service is, therefore, a part of the regular armed force of the country, identical in character with the naval service, and may at any time, in peace or in war, be made one by executive order.

REVENUE CUTTER SERVICE.

The number of commissioned officers authorized upon the active list is as follows: Of the line: 37 captains, 37 first, 37 second and 37 third lieutenants. Of engineer officers: 1 captain of engineers, who is also the engineer-in-chief, with the rank of captain of the line; 35 chief engineers, with the rank of first lieutenants; 17 first and 18 second assistant engineers, with the rank of second and third lieutenants, respectively, and 1 constructor with the rank of first lieutenant.

Entrance to the service (line) is confined to graduates of the School of Instruction, United States Revenue Cutter Service, to which young men are appointed after physical and mental examinations, as cadets, serving a probationary term of three years. They are, at graduation, commissioned as third lieutenants, and at every promotion thereafter must pass a satisfactory mental and physical examination.

Entrance as engineer officers. The candidate must pass on a high standard, a satisfactory examination, mental and physical, and is then commissioned in the lowest grade, second assistant engineer. Promotions are only gained after rigid examination and record for efficiency.

The enlisted force of the service numbers about 1,250 men.

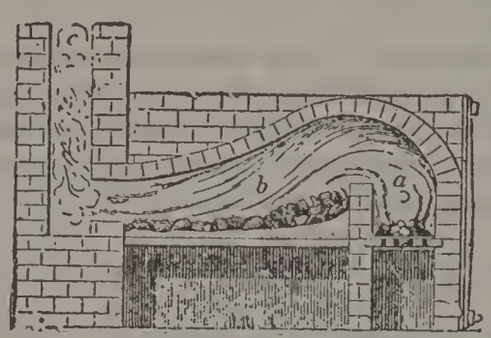
There are in the fleet 11 cruisers of tonnage from 588 to 985 (gross); 13 cruisers, tonnage from 330 to 416; 13 harbor vessels and launches, and one sailing bark, practice ship for cadets.

Previous to 1889 the chiefs of the service were civilians, and the consulting engineer was employed from the outside. In that year Capt. L. G. Shepard, R.C.S., was assigned as chief, and Chief Engineer J. W. Collins, R.C.S., as engineer-in-chief. Subsequently, by enactment of Congress, the chief of the service must be a captain, while the captain of engineers is assigned as engineer-in-chief. Upon the death of Capt. L. G. Shepard in March, 1895, he was succeeded by Capt. C. F. Shoemaker.

The following statistics show the work of 9 years to 1903: Vessels seized or reported for violation of law, 1,598; fines and penalties incurred by vessels seized, $10,721,107; vessels in distress assisted, 736; value of vessels and cargoes, $19,371,505; persons on board vessels assisted, 10,349; lives actually saved, 820; medical aid rendered to persons, 190,360; miles covered in all of above work, 3,234,245.

REVERB: see under REVERBERATE.

REVERBERATE, v. *rĕ-vėr′bėr-āt* [L. *reverbĕrātus*, beaten, cast, or driven back—from *re*, back or again; *ver′bĕrō*, I strike or beat; *verber*, a lash, a whip: It. *riverberare*: F. *réverbérer*]: to return or send back, as a sound; to echo; to reflect, as rays of light; to drive from side to side, as flames; to be repelled; to resound: ADJ. in *OE.*, beating back; resounding. REVER′BERATING, imp. REVER′BERATED, pp. REVER′BERA′TION, n. *-ā′shŭn* [F.—L.]: the act of reflecting light and heat, or of repelling sound. REVER′BERA′TOR, n. *-ā′tėr*, that which reverberates; a reflecting-lamp. REVER′BERA′TORY, a. *-ā′tėr-ĭ*, returning or driving back sound or light or heat. REVERBERATORY FURNACE, furnace so constructed that matter, e.g., ore, may be heated in it without coming in direct contact with the fuel. It consists essentially of three parts—a fireplace at one end; in the middle, a flat bed or sole, on which the material to be heated is placed; and at the other end, a chimney to carry off the smoke or fume. Between the fireplace and the bed, a low partition-wall, called a fire-bridge, is placed, and the whole built over with a flat arch, dipping toward the chimney. The flame plays over the fire-bridge, and is reflected, or *reverberated*, on the material beneath, hence the name. See LEAD. REVERB, v. *rĕ-vėrb′*, in *OE.*, to reverberate.



Section of Reverberatory Furnace.

REVERE, v. *rĕ-vēr′* [F. *révérer*, to revere—from L. *reverēri*, to stand in awe or fear of—from *re*, back or again; *verĕor*, I feel awe: It. *reverire*]: to regard with fear mingled with respect and affection; to honor; to hold in estimation. REVE′RING, imp. REVERED′, pp. *-vērd′*. REVE′RER, n. *-rėr*, one who reveres. REVERENCE, n. *rĕv′ėr-ĕns* [F. *révérence*—from L. *reverentĭă*]: fear mingled with respect and affection, as for a parent or one in authority; a title given in addressing a clergyman; an act of obeisance; a bow; a courtesy; poetical title of a father: V. to regard with fear mingled with respect and affection. REV′ERENCING, imp. REV′ERENCED, pp. *-ĕnst*. REV′ERENCER, n. *-sėr*, one who reverences. REV′ERENT, a. *-ĕnt*, expressing reverence; humble; submissive. REVE′REN′TIAL, a. *-ĕn′shal*, proceeding from reverence, or expressing it. REV′EREN′TIALLY, ad. *-lĭ*, in a reverential manner. REV′ERENTLY, ad. *-lĭ*, in a reverent manner; respectfully.—SYN. of 'revere': to venerate; honor; adore; reverence; worship;—of 'reverence': awe; veneration; honor; adoration; deference; respect.

REVERE, Giuseppe: an Italian dramatist and poet: b. Triest, 1812; d. 1889. He was on the staff of *La Concordia*, a liberal journal of Turin, to which he contributed largely, and subsequently lived in Genoa and Rome. Besides several historical plays he wrote: *La cacciata degli Spagnuoli da Siena*, an historical work (1847); the poetical works, *Sdegno e affetto* (1845); *Nuovi sonetti* (1846); *Persone ed ombre* (1862); and *Osiride* (1879); and the sketches, *Bozzetti alpini* (1857); and *Marine e paesi* (1858).

REVERE, *rĕ-vēr'*, Joseph Warren: American military officer: b. Boston, Mass., 1812, May 17; d. Hoboken, N. J., 1880, Apr. 20. He entered the navy as midshipman in 1828, attained the rank of lieutenant in 1841, served in the Mexican war, and in 1850 resigned from the navy. At the outbreak of the civil war he was appointed colonel of volunteers in the army, and in 1862 was promoted brigadier-general. He commanded a brigade at Fredericksburg and was engaged at Chancellorsville. For his conduct in the latter battle he was censured by his superior officer, tried by court-martial, and dismissed from the service in 1863. The decision was revoked by President Lincoln, and Revere then resigned. He published *Keel and Saddle* (1872).

REVERE (French, Rivoire), Paul: American patriot: b. Boston, Mass., 1735, Jan. 1; d. there 1818, May 10. He was trained as a gold- and silver-smith, and was skillful in the engraving of designs for silver plate. In 1756 he participated in the expedition for the capture of Crown Point, upon his return from which he set up as a goldsmith, and also practised copper-plate engraving. Among his prints were a likeness of Samuel Adams, a portrait of King Philip, a view of Castle William, and the Boston Massacre. He also engraved the plates for the earliest paper currency of Massachusetts. In 1774 he was one of the grand jurors who refused to serve in consequence of the act of parliament making supreme court justices independent of the legislature as regards salary. In the autumn of that year he became one of the 'thirty North-end mechanics,' who patrolled the Boston streets to watch the movements of the British forces. On Apr. 14, 1775, this committee of observation noted preparations in barracks and on board ship on the part of the British. On the evening of the 18th it was seen that troops were marching across the common to the inner bay. Revere forthwith had a preconcerted signal set in a Northend church tower—the honor being claimed for Christ Church and for the church in North Square destroyed by the British—crossed the river, mounted a horse on the Charlestown side, and began his famous midnight ride. He was none too early, for at 2:30 800 British troops were landed at Lechmere Point and marched on Lexington. Revere became the trusted special messenger of the committee of safety, and after the

evacuation of Boston was made successively major and lieutenant-colonel of a regiment of artillery. He took part in the Penobscot expedition in 1779. After the Revolution he resumed as gold- and silver-smith, built a bell- and cannon-foundry, and in 1801 established large copper-rolling works at Canton, Mass. It is said that he was the first in America to smelt copper ore, and to refine and roll copper into sheets and bolts. He was conspicuously associated with benevolent enterprises. Longfellow's poem, *The Midnight Ride of Paul Revere,* in which, says Winsor, the author has 'paid little attention to exactness of fact,' is well known.

REVERE: Mass., town in Suffolk co.; on the Atlantic coast, and on the Boston & M., the Boston, R. B. and Lynn railroads; five m. n.e. of Boston. The place was settled in 1627, and was first named Rumney Marsh. Until 1738 it was a part of Boston. In 1739 it was incorporated as Chelsea, and in 1846 was set off and reincorporated as North Chelsea. In 1871 the name was changed to Revere, in honor of Paul Revere (q.v.). It is a popular residential town and a summer resort. It has a Massachusetts State Bath House, built and maintained by the state; Revere Town Hall, a memorial to Paul Revere; and a Carnegie Library. It has a number of churches and good public schools. The government is by annual town meeting; the administrative officials elected are five, who constitute a board of selectmen. Pop. (1910) 18,219.

REVEREND, a. *rĕv'ėr-ĕnd* [F. *révérend;* It. *reverendo,* reverend—from L. *reveren'dus,* venerable—from *reverēri,* to stand in awe or fear of (see REVERE)]: entitled to or worthy of reverence; a title of honor applied by courtesy to a clergyman: in Rom. Cath. countries it is applied to members of the various religious orders. REV., a common contraction of *reverend,* usually prefixed to the name of a clergyman. VERY REVEREND, prefixed to that of a dean, the principal of a Scotch university when a clergyman, and the moderator of the General Assembly of the Church of Scotland. RIGHT REVEREND, prefixed to the name of a bishop in Britain or the United States. MOST REVEREND, prefixed to the name of an archbishop in Britain or the United States. An archdeacon has the prefix Venerable. The style Reverend is generally adopted by, and given to, the clergy or ministers of the different dissenting bodies in England, but strict churchmen of the Establishment refuse to accord the title reverend to the clergymen of the dissenting churches. The Bishop of Lincoln in 1874 refused to allow this title to be inscribed on the tombstone of a Wesleyan minister, and his action was approved by judgment of the Arches court; but that judgment was reversed on appeal to the privy council, when the title was declared to be simply one of courtesy and not confined to clergymen of the Established Church.

REVERIE, n. *rĕv'ĕr-ī*, or REV'ERY, n. plu. REV'ERIES, *-īz* [F. *rêverie*, a musing—from *rêver*, to dream: OF. *resverie*, ideas floating irregularly in the mind; *resver*, to speak idly (see also RAVE)]: loose, irregular train of ideas floating in the mind; a fit of deep musing, during which all or greater part of the external senses remain unconscious of surrounding objects. R. is described as of three kinds: (1) *absence of mind*, in which the attention is truant, and does not readily yield to the will; (2) *abstraction of mind*, in which the mind is concentrated on some particular theme by the direct act of the will; and (3) *brown study*, gloomy or dull reverie; reverie in which the will relaxes itself, and gives full play to any train of ideas which may be uppermost. —R. has been defined the dream of a waking man; but it differs in many respects from dreaming. Regarded in the light of mental philosophy, R. is, like dreaming, the involuntary action of the fantasy or imaging power, though it may be guided somewhat by attention. In dreams, the senses are closed to the outer world, whose presence in R. prevents our mistaking fancies for realities, as in dreams. In a higher sense, R. is a word sometimes applied to a state of abstraction, when the mind is wholly engaged in earnest thought. In an exaggerated form, it is rare; but when it goes beyond absence of mind, or abstraction from what is passing around, it is abnormal and unhealthful; and may, if at all approaching a habit, be regarded as a phenomenon of an imperfectly constituted, if not of a diseased nervous temperament. In general, R. takes the direction of personal pursuits, tastes, and experiences; the mind may be occupied according to the age, character, or pursuits of the individual, by calculations, profound metaphysical inquiries, by fanciful visions, or by such trivial and transitory objects as to make no impression on consciousness, so that the period of R. is left an entire blank in memory. The most obvious external feature marking this condition is the apparent unconsciousness, or only partial perception, of external objects. In what may be designated the first stage, castle-building, this inattention is only apparent, as the surrounding scenery may enter into the illusion, and constitute part of the romance. In the celebrated case of Hartley Coleridge, whose double life, indulged in for years, affords illustrations of voluntary creations ultimately extorting a degree of belief and expectation—from a field near his home burst forth a cataract, from which flowed a river; on the banks of this arranged themselves fertile fields, a populous region, divided into realms and kingdoms, governed by laws, having traditions, histories. His 'Ejuxria' was an analagon to the world of fact, embellished by imagination. This cherished unreality was parted with reluctantly. A more advanced stage of the affection is where, independently of the will, and in opposition to the ordinary habits of the individual, and under peculiar circumstances, there

occur a loss of cognizance of surrounding objects and relations, and a state of abstraction or brown study, in which absurd and incongruous things are said and done. Ludicrous examples of this state are where a man loses his way in his native town, forgets his own name, or retires to bed in the middle of the day. In a third stage or form, the man in a R. cannot be recalled to active perception, loses individuality, and is absorbed in the contemplation of unreal, though self-suggested impressions: this is seen in such cases as St. Teresa, and in the trances of Mysticism, Quietism, Second Sight.—*Memoir of Hartley Coleridge*, Disraeli's *Life of Lord G. Bentinck*, Maury's *Le Sommeil et les Rèves*.

REVERSE, v. *rĕvĕrs'* [F. *re-vers*, reverse, opposite side—from L. *re*, back or again; *versus*, turned—from *verto*, I turn: It. *riversare*, to upset or overturn]: to turn or put in the contrary direction, position, condition, or order; to turn upside down; to invert; in *law*, to change by a contrary decision; to annul; in *OE.*, to return: ADJ. having the contrary or opposite direction; opposite: N. a contrary; an opposite; generally a change for the worse; misfortune; in *mil.*, the back or rear of a body of troops: in *numismatics*, the side or face of a coin or medal opposite to the side on which the head or principal figure is impressed—the latter being called the *obverse*: there is, however, generally an inscription or device on the reverse; and when the lower part of it is markedly separated from the rest, it is called the *Exergue* [Gr. *ex ergou*, outside the work], and bears a secondary inscription. REVER'SING, imp. REVERSED', pp. *-zĕrst'*: ADJ. changed or turned to the contrary; annulled; in *conch.*, applied to a shell whose whorls run from right to left, or whose aperture is on the left, when placed before a spectator with its apex upward. REVERSAL, n. *rĕ-vĕr'sal*, a change; a contrary decision. REVERSE'LY, ad. *-vĕrs'li*. REVERSE'LESS, a. *-lĕs*, not to be reversed. REVERSIBLE, a. *rĕ-vĕr'sĭ-bl* [F.—L.]: that may be reversed. REVER'SIBLY, ad. *-blĭ*. REVER'SEDLY, ad. *-sĕd-lĭ*. REVER'SION, n. *-shŭn* [F.—L.]: a returning; right to future possession or enjoyment, as an estate or annuity after the death of a person now living; succession; the right which a person has to any inheritance or place of profit after the decease of another. When the emergence of a reversionary right is certain and the date fixed, the marketable value of the reversion is easily calculated (see INTEREST): when the reversion is contingent, depending on some future event of unknown date, the problem becomes complex (see works that treat of Life Insurance, etc.). REVER'SIONARY, a. *-ĕr-ĭ*, that may be enjoyed in succession. REVER'SIONER, n. *-ĕr*, one who holds a reversion. TO REVERSE AN ENGINE, to cause it to perform its revolutions in an opposite

Reverse Shell.

direction, with the view of quickly bringing it to a stand or of causing it to move backward. REVERSE CURVE, on *railways*, a curve like the letter S, consisting of two curves lying in opposite directions. REVERSE FIRE, in *mil.*, the fire which proceeds from the rear. REVERSED ARMS, arms carried under the right arm, muzzle to the rear and pointing downward, the left hand passed behind the back and grasping the barrel—only so carried at military funerals. REVERSING GEAR, apparatus for causing a locomotive or marine engine to move backward.—SYN. of 'reverse, v.': to invert; overthrow; subvert; annul; revoke; overturn; overset; repeal; contradict;—of 'reverse, n.': change; vicissitude; defeat; check; misfortune; opposite.

REVER'SION TO TYPE: re-appearance in offspring of ancestral feature or type. Atavism (q.v.), is nearly synonymous, but properly more restricted, referring to the return of characters observed in less remote ancestors, of the human race especially. R. is sometimes seen in cultivated plants, exhibiting features of the wild plant. Domestic animals do not always return to the feral form and color, when they run wild, but in many instances or in some degree they do. Pigs have resumed the stripes and other characteristics of the wild boar. Black is supposed to be the original color of sheep, to which some in almost every flock return, despite most careful exclusion for many generations. The crossing of breeds sometimes reproduces at once the original type, as in the case of pigeons, and white and black fowls; the former was followed by offspring like the wild blue Rock Pigeon; the latter became red like the original jungle-cock of India. In plants there is often a partial morphological reversion, as when stamens are re-converted into petals, or petals into leaves. Consult Darwin's *Variation of Animals and Plants under Domestication;* and Lankester's *Degeneration, a Chapter in Darwinism.*

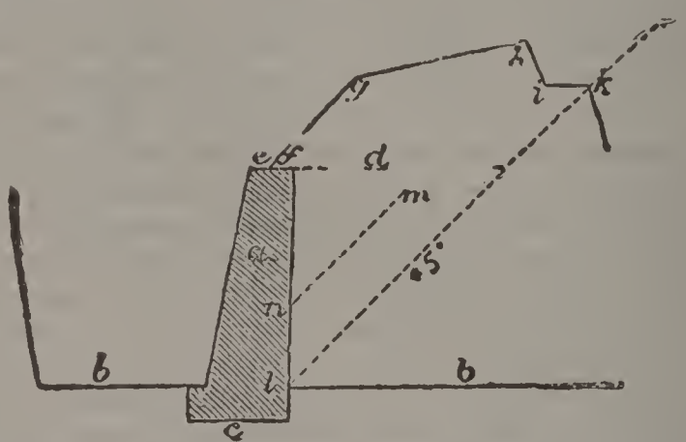
REVERT, v. *rĕ-vêrt'* [L. *revertĕrĕ*, to turn back—from *re*, back or again; *verto*, I turn]: to fall back; to turn back; to refer back to; to return to the original owner, or to his heirs. REVERT'ANT, a. in *her.*, bent and rebent. REVERT'ED, in *her.*, flexed and reflexed, or bent in the form of the letter S; revertant. REVERT'ING, imp. REVERT'ED, pp. REVERT'IBLE. a. *-ĭ-bl*, that may revert or return. REVERT'IVE, a. *-ĭv*, changing; causing reversion REVERT'IVELY, ad. *-lĭ*.

REVERY: see REVERIE.

REVEST, v. *rĕ-vĕst'* [Norm. F. *revestir;* F. *revêtir*, to clothe—from L. *re*, again; *vestīrĕ*, to dress, to clothe (see VEST)]: in *OE.*, to clothe again; to vest again in possession of an office. REVEST'ING imp. REVEST'ED, pp.

REVET, v. *rĕ-vĕt'* [F. *revêtement*, the lining of a ditch —from *revêtir*, to clothe (see preceding entry)]: in *mil.*, to face with masonry or other material, as an embankment. REVET'TING, imp. REVETTED, pp. *rĕ-vĕt'ĕd.*

REVET'MENT: in permanent fortification, a retaining-wall of masonry for holding back the earth of which works are composed. The most ordinary position of revetments is for the escarp and counterscarp of the ditch



ac, revetment; *b*, bottom of ditch, level of ground within the work; *de*, top of rampart; *fgh*, parapet; *ik*, banquette; *kle*, mass of earth supported by revetment; *m*, centre of gravity of mass; *n*, point of greatest pressure on revetment.

(see FORTIFICATION). The most important of these two is the escarp, which has to hold back the great mass of earth represented by the rampart, parapet, banquette, etc. It is usually of solid brickwork or stone, 5 ft. thick at the top, and sloping outward as it descends (on the ditch-side only) to the extent of 1 in 6. Prior to Vauban's time, the escarp R. was usually raised to the top of the parapet; but as in this case the artillery of a besieger played on the top of the wall, and ruined it soon after the siege commenced, Vauban adopted the principle—thereafter followed—of raising it no higher than the crest of the glacis, or about 7 ft. above the natural ground, leaving the parapet above of sloped earth only. When the main ditch is 24 ft. deep, the scarp R. will be about 30 ft. high. Additional strength is imparted to the R. wall by massive buttresses at every 15 ft., called *counterforts;* and these, again, are sometimes connected and strengthened by masonry arches outside the R. The R. forms a terrible barrier to an assaulting party. In field-works, a temporary R. may be made of timber, turf, hurdles, or other materials at hand.

REVIBRATE v. *rē-vī'brāt* [*re*, again, and *vibrate*]: to vibrate back, or in return.

REVICTUAL, v. *rē-vĭt'l* [*re*, again, and *victual*]: to furnish anew with provisions.

REVIEW, n. *rĕ-vū′* [*re*, again, and *view*: F. *revue*, a review—from *revoir*, to see again, to revise—from L. *re*, again; *vidērĕ*, to see]: a second examination, as for improvement or amendment; a survey; critical remarks on a new publication; a periodical, generally consisting of essays, criticism, etc. (see PERIODICALS): in *milit.*, public inspection of troops or ships in parade order by a superior officer. Reviews always comprise a march past the inspecting-officer in column, and a general salute in line; to these is frequently added a mock-battle, for amusement of spectators, and for practicing the troops in warlike manœuvres: V. to look back on: to view and examine again; to reconsider; to criticise, as a new publication; to inspect, as troops. REVIEW′ING, imp.: ADJ. inspecting, as an army: N. the practice of writing and publishing criticisms of new publications; the business of a reviewer. REVIEWED, pp. *rĕ-vūd′*. REVIEW′ER, n. *-ėr*, one who reviews; a literary critic. REVIEW′AL, n. *-al*, the review of a book.—SYN. of 'review, n.': re-examination; resurvey; survey; criticism; reconsideration; revise; revisal; revision; retrospect.

REVILE, v. *rĕ-vīl′* [L. *re*, again; *vilis*, mean, worthless (see VILE)]: to treat with opprobrious and contemptuous language; to upbraid: N. in *OE.*, reproach; contumely. REVI′LING, imp.: N. the act of reproaching; the act of using contumelious language. REVILED′, pp. *-vīld′*. REVI′LER, n. *-lėr*, one who reviles. REVI′LINGLY, ad. *-lĭ*.—SYN. of 'revile, v.': to vilify; calumniate; reproach; upbraid.

REVINDICATE, v. *rē-vĭn′dĭ-kāt* [*re*, again, and *vindicate*]: to vindicate again; to demand and take back what has been lost.

REVISE, v. *rĕ-vīz′* [F. *reviser*—from L. *revisĕrĕ*, to come to see again—from *re*, again; *visĕrĕ*, to look at attentively—from *vidērĕ*, *vīsum*, to see: Sp. *revisar*, to revise]: to examine carefully for purposes of correction; to alter; to amend: N. a re-examination; among *printers*, a second proof-sheet pulled for correction and comparison with the first. REVI′SING, imp. REVISED′, pp. *-vīzd′*: ADJ. re-examined for correction. REVI′SER, n. *-zėr*, one who revises. REVI′SAL, n. *-zal*, the act of examining for correction and improvement. REVI′SION, n. *-vĭzh′ŭn* [F.—L.]: the act of examining for correction. REVI′SIONAL a. *-al*, pert. to revision. REVI′SOR, n. *-vī′zėr*, in *Russia*, one who takes the number of inhabitants. REVI′SORY, a. *-zėr-ĭ*, able or tending to revise. REVISING BARRISTERS' COURTS, courts held in the autumn in districts throughout England to revise the list of voters for members of parliament.—SYN. of 'revision': revisal; re-examination; review.

REVISED′ VER′SION: see BIBLE, CANTERBURY REVISION OF THE.

REVISIT, v. *rē-vĭz′ĭt* [*re*, and *visit*]: to visit again.

REVI'VALS OF RELIGION: public awakenings of interest in personal religion. The term *Revival of Religion*, briefly *Revival*, is employed to denote an increase of faith and of earnest activity in individual Christians, particularly after a period of religious declension; also an increase of religion in a community or neighborhood, both through the *revival* of those who are already religious, and through the *conversion* of the previously irreligious. It does not necessarily (though it may usually) involve a previous declension: sometimes it may denote the joyous harvest-time when the operation of natural laws brings the ingathering of fruits from seeds sown in quiet patience. In these applications, its use is countenanced by several passages of Scripture; the idea which it is intended to convey is, however, far more frequently suggested by passages in which the term does not occur. The idea of revival is connected particularly with the system of 'evangelical' doctrine, especially with that part of it which relates to the work of the Holy Spirit in awakening the church to a fuller spiritual life, and in the conversion of sinners.

What are commonly called R. are religious movements or excitements extending over a neighborhood, sometimes over a country. By those who regard them as genuine, it is urged in their favor, that they are in accordance with what the Scriptures teach us to expect, and that we have instances of a similar kind recorded in the Scriptures themselves—both in the history of the Jews, and in the early history of the Christian Church, particularly in the effusion of the Holy Spirit on the day of Pentecost, and afterward in connection with the ministry of the apostles, when many were converted through a single discourse, or in other cases evidently within a short time. It is urged also that such operations of the Divine Spirit, though supernatural, are not therefore against nature; and that indeed they accord with the law of periodicity—of ebb and flow—which is observed in mental states. It is further urged that the promise of the effusion of the Spirit in 'the latter days' was not completely fulfilled on the day of Pentecost, but relates to the whole period of the Christian dispensation, and that, according to many prophecies, we have reason to expect even more of it in future times than there has ever hitherto been, so that 'a nation shall be born in a day, and the kingdoms shall be the Lord's.' The Reformation of the 16th c., and the partial movements of the same kind which preceded it, are regarded as essentially R. of religion—the Reformation itself the greatest since the apostolic age. The great development of religious fervor in England in the 17th c., is, according to this view, a revival, and the extravagances which attended it as mere excrescences, like those of the Anabaptists in the time of the Reformation. The next great movement of the same kind was that in the first half of the 18th c., in which the Methodist churches originated (see METHODISTS). It was accompanied with many circumstances

similar to those which have attended later R. The term revival did not begin to be commonly employed till after this period; and the revival in New England and other parts of N. America about the same time, was then and still is generally designated the *Great Awakening*. Its beginning seems to have had no connection with the Methodist movement in England, though subsequently they became connected through Whitefield's visits to N. America, and his powerful preaching to vast crowds. The revival in New England, which began about 1734, under the ministry of Jonathan Edwards (q.v.), at Northampton, and rapidly extended over great part of New England and N. Y., was speedily followed by similar religious movements in Scotland, not altogether independent of it. Such movements had not been unknown in Scotland, though confined to particular times and localities. In 1625 and following years, there was a revival at Irvine, under the ministry of David Dickson, which extended to the neighboring parish of Stewarton, and was contemptuously styled by its adversaries the *Stewarton sickness*. In 1630, several hundreds are said to have been converted at once, through a sermon preached at Kirk-of-Shotts by John Livingstone, then a young preacher, afterward an eminent minister of the Church of Scotland, and a sufferer for the cause of Presbyterianism. About the same time (1623–41), similar R. took place in Ireland under the ministry of Scottish Presb. ministers in Ulster, to which the origin of the Irish Presb. Church is in great part ascribed. Local R. are recorded at various places in Scotland remote from each other, 1742, 1798–1800, 1804–13; and an extensive one in Wales, resulting in the formation of the Welsh Calvinistic Meth. Church, but not confined to that connection. Local revivals attended the ministry also of some evangelical ministers of the Church of England.

In 1839, a revival began at Kilsyth, Scotland, which spread to many other places. During a sermon by William C. Burns in the parish church, the emotion of many of the congregation broke out in sobs and cries, so that for a time the preacher's voice could scarcely be heard. For months, religion was the almost exclusive subject of interest to a great part of the inhabitants of the parish, and many meetings for public worship were held besides the ordinary Sabbath services, at which great emotion was often shown. In the first half of the 19th c. there were many R. in the United States, notable among which were those under Charles G. Finney (q.v.), who also visited England, and preached to vast crowds in London and other cities. These R. were generally confined to congregations, colleges, or localities, but sometimes, as in connection with Dr. Finney, extended over great districts. Throughout at least the northern and middle United States, the idea had become familiar to the popular mind, that R. ought to be expected from time to time; from which naturally followed the belief that special means should be employed to produce them.

From this resulted, in some cases, increased earnestness in preaching and prayer, with greater assiduity in all ordinary means for promotion of religion; in other cases, direct endeavors to produce excitement, as, in the states farther southward, by *camp-meetings*—assemblies of great numbers of people held in the open air, at which exciting addresses were delivered by preacher after preacher, to work upon the nervous sensibilities.

Nothing of this kind, however, attended the beginning of the great religious movement in 1857 and the two following years. Its origin is ascribed in part to the thoughts and feelings awakened during a period of great commercial distress. It began in New England, particularly in Conn. and Mass., and rapidly extended to N. Y. and over the middle and western states. It was not generally attended with scenes of great excitement. Strong, but calm religious feeling was its general characteristic. In New York, almost every congregation received great accession of members, and prayer-meetings were held in churches, public halls, and even theatres, for about an hour in the middle of the day, which were attended by crowds of persons actively engaged in business. More than 2,000 places in N. Y. (state) were reported as partaking of this revival. Very soon afterward a similar movement took place in n. Ireland, not apparently arising from that in America, though certainly connected with it soon afterward, and promoted by the tidings of it. It rapidly extended over the whole north of Ireland, and subsequently to Scotland, Wales, and parts of England. As a rule, it was free from excitement, and characterized by little else than intensity of religious feeling. Another remarkable revival, which extended over the greater part of Great Britain 1874–5, originated in the efforts of two American evangelists, Moody and Sankey, and was characterized by almost entire absence of sensationalism, and by a general religious awakening. See MOODY, DWIGHT LYMAN: EVANGELIST.

R. have occurred in other parts of the world. A widespread movement of this kind in Switzerland, extended under the ministry of Felix Neff to the Prot. district of Dauphiné, and to the neighboring Vaudois or Waldenses, on the Italian side of the Alps. Similar religious movements have occurred in recent years in many parts of Sweden. The Rom. Cath. Chh. has had in various countries many well-organized and efficient R., termed *missions* (see MISSION). The Church of England, and recently the Prot. Episc. Chh. in the United States, have organized special 'missions,' developing wide and deep religious interest under earnest and pungent preaching, though carefully guarded against mere sensationalism. Congl., Presb., and Meth. missionaries have had some remarkable R. in heathen lands. Notable were those which many years ago swept the Sandwich Islands, and resulted in the organization of immense Congl. churches; and those among the Telugus in India, among whom the

Bapt. missionaries gathered converts numbering more than 12,000 within 5 years.

R. have been accounted for in very different ways; but in general, too evidently in mere accordance with the different religious views of those by whom the theories have been proposed. Some opponents have attempted to explain the phenomena of religious excitement extending over wide districts, and rapidly spreading from place to place, by the supposition of a kind of epidemic disease affecting the mind. Another opinion prevalent among those who see in R. nothing good, is, that they are the result of endeavors to work on the feelings. It is replied, that though this theory might be plausible, if only such instances were considered as the camp-meetings of the Southern Methodists, it is far from being in accordance with ascertained facts as to many of the R. in America and in other countries. It is certain that many of these have taken place without any attempt to work on the feelings, more than has been always ordinary and proper in the preaching of the gospel; and that the greatest outburst of emotion has often been connected with preaching of the most simple and sober kind.—By those who believe in the reality of R. as productive of a true increase of religion, they are ascribed to the operation of the Holy Spirit, to which, according to the 'evangelical' scheme, the 'conversion' of every individual soul is ascribed, and also all increase of faith and piety in the converted. R. have, however, often been regarded with doubt by many who believe in the whole doctrine of the work of the Spirit as generally held in the Prot. churches, but who regard the excitement frequently attending them as inconsistent with the proper sobriety and solemnity of religion, and think the progress of religion ought rather to be gradual, and without much to call attention to it at one time more than another. To this it is replied, that while a blessing on the regular use of ordinances may confidently be expected if duly sought by prayer, there is yet much in Scripture and in the nature of the human mind to indicate that particular seasons may be unusually marked by the evidence of a blessing; and further, that R., when they take place, generally show the usefulness of the ordinary religious means, as they seldom occur among persons very ignorant of Christian truth, but rather among those who have previously had the most faithful ministrations. With regard to the excitement attending many revivals, it is argued that this excitement is not wonderful, if persons are suddenly impressed with a deep sense of their sins and of the danger of being separated forever from God, and that it is in some measure also to be expected in those brought by quick transition from deep distress to a full sense of God's forgiveness and love. Are we to be surprised, it is asked, if persons in such circumstances, after much effort of self-restraint, cry aloud in the congregation, or fall down, overpowered by their emotions? It is sometimes alleged by the oppo-

nents of R., that much of the excitement manifested in them is merely hysterical; and some of their advocates have rashly denied that this is ever the case; others, more prudent, admitting it, deny that it affords any just cause of objection, and maintain that hysterical excitement is for certain temperaments natural and unavoidable in such circumstances; they acknowledge, however, that like excitement produced by causes which have nothing to do with religion, it may extend from one to another, even where the cause in which it originated does not operate; and they therefore decline to consider such excitement as in itself any evidence of the religious or spiritual condition of the persons affected by it. It may be conceded also by the friends of R., that such occasions are favorable and inviting to persons whose zeal exceeds their discretion, and too often afford opportunity for ignorant and self-conceited or over-excitable persons to thrust themselves forward as teachers and conductors of religious exercises. Friendly criticism may be directed also against too much urging of persons who have been of very profligate life to recount their own history, which has sometimes been carried so far, that they have seemed even to glory in the enormity of their past wickedness. The criticism also has been made that certain peculiar modes of expression, not unaptly designated a kind of slang, have sometimes come into use in connection with R., with the unhappy effect of prejudicing against them many minds, particularly among the educated classes. This is an infelicity which R. share with other great popular movements.

Endeavor has here been made to present the subject fairly; but it is evident that the opinion formed by any one will depend largely on his general religious views. As to mere religious excitement, however, and bodily affections resulting from it, many facts show, what might be presumed beforehand, that these may be connected with religious views extremely at variance. Excitement may be produced by religious views utterly false, as well as by the true. Heathenism has always abounded in it; Mohammedanism has much of it. Also, allusion may be made to the extravagances of the Flagellants (q.v.), and to the strange scenes of the Dancing Mania.

The subject of this article has been treated in a multitude of publications, almost every revival which takes place calling forth new pamphlets, narrative and controversial. The works of Jonathan Edwards deserve the first attention of those who wish to study the subject; Finney's views and accounts also are important; and much information as to the history of R. is in Gillies's *Historical Collections Relating to Remarkable Periods of the Success of the Gospel.* See also Mrs. Lundie's work *Revivals in the British Isles;* Robe's *Narrative of the Revival of Religion at Kilsyth, Cambuslang, and other Places in* 1742 (new ed., Glasgow, 1840). Edwards maintains the genuineness of revivals with perhaps more force of argument than any writer has since done; and most of

those extravagances which have sometimes attended revivals to the present time, might have been avoided if those whose religious views accord with his had more carefully studied his discriminating remarks and sober counsels. No work has yet been produced such as Edwards in one of his letters expresses a strong desire to see—'a history of true, vital, and experimental religion, and enthusiasm, bringing down the history from age to age, judiciously and clearly making the distinction between the one and the other.'

REVIVE, v. *rē-vīv'* [F. *revivre*, to rise from the dead—from L. *revīvĕrĕ*, to live again—from *re*, again; *vīvo*, I live: It. *rivivere*]: to return to life; to recover from a state of neglect; to recover new life or vigor; to restore or bring again to life; to be reanimated after depression; to reanimate; to quicken; to refresh; to bring back to the memory; to inspire anew with hope or joy; in *chem.*, to recover or reduce to its natural state, as a metal after calcination. REVI'VING, imp.: ADJ. coming to life again; reanimating; refreshing: N. the act of coming to life again. REVIVED', pp. *-vīvd'*. REVI'VINGLY, ad. *-lĭ*. REVI'VAL, n. *-val*, recovery to life from death or apparent death; return to activity from a state of languor; recovery from a state of neglect or depression; renewed and more active attention to the importance of religion; the means by which this is accomplished (see REVIVALS). REVI'VALIST, n. *-văl-ĭst*, one who endeavors to promote a greater earnestness in religion. REVI'VER, n. *-vėr*, he or that which invigorates or revives; one who brings into notice again after neglect. REVI'VOR, n. *-vėr*, in *law*, bill or writ in renewal of a suit abated by the death of one of the parties to it. REVIVIFICATION, n. *rē-vĭv'ĭ-fĭ-kā'shŭn* [L. *facĭō*, I make]: restoration of life; the act of recalling to life. REVIVAL OF LEARNING (see RENAISSANCE, THE). —SYN. of 'revive': to refresh; reanimate: renovate; renew; recover; reinvigorate; awaken; animate; quicken; rouse; comfort.

REVIVIFY, v. *rē-vĭv'ĭ-fī* [*re*, and *vivify*]: to give new life or vigor to; to reanimate.

REVIVISCENT, a. *rĕv'ĭ-vĭs'sĕnt* [L. *revīvis'cens* or *revīviscen'tem*, coming to life again—from *re*, again; *vīves'co*, I get life; *vīvĕrĕ*, to live]: regaining or restoring life. REV'IVIS'CENCE, n. *-sĕns*, or REV'IVIS'CENCY, n. *-sĕn-sĭ*, renewal of life; reanimation.

REVIVOR: see under REVIVE.

REVOCABLE, a. *rĕv'ō-ka-bl* [F. *révocable*—from L. *revocab'ĭlĭs*, revocable—from *revocārĕ*, to recall—from *re*, back or again; *voco*, I call: It. *revocabile*]: that may be recalled; that may be repealed or annulled. REV'OCABLY, ad. *-blĭ*. REV'OCABLENESS, n. *-bl-nĕs*, or REV'OCABIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being revocable. REV'OCA'TION, n. *-kā'shŭn* [F.—L.]: the calling back of a thing granted; repeal: reversal (see below). REVOCATORY, a. *rĕv'ō-kā'tėr-ĭ*, tending to revoke.

REVOCA'TION, in Law: the withdrawing or annulling of a deed or will otherwise valid. A will is said to be always subject to R., even though the testator say in the most express language that it is not to be revocable; because a will is supposed to be subject to the ever-varying occasions of life. On the other hand, a deed is not capable of R., and is in its nature final; but if an express proviso is inserted which reserves a power of R., then this is a valid power, provided the directions of the deed are strictly followed.

REVOKE, v. *rĕ-vōk'* [F. *révoquer*—from **L.** *revocārĕ*, to recall—from *re*, back or again; *voco*, I call: **It.** *revocare*]: to repeal; to annul; to reverse, as a law; to declare void; to renounce at cards: N. the act of renouncing at cards. REVOK'ING, imp. REVOKED, pp. *rĕ-vōkt'*. REVOKE'MENT, n. *-mĕnt*, repeal; recall; revocation.—SYN. of 'revoke, v.': to annul; cancel; abolish; recall; countermand; rescind; repeal; abrogate; reverse; abjure.

REVOLT, v. *rĕ-vōlt'* [F. *révolter*, to raise a rebellion; *révolte*, a revolt—from L. *revolūtus*, revolved—from *re*, back; *volvĕrĕ*, to roll: It. *rivoltare*, to revolt; *rivolta*, a revolt]: *literally*, to turn round; to fall off or turn from one to another; to renounce allegiance to a sovereign or a state; to shock; to cause to turn away from with abhorrence or disgust; in *OE.*, to change: N. a change of sides; insurrection; rebellion; in *OE.*, one who changes sides. REVOLT'ING, imp.: ADJ. doing violence to the feelings; exciting abhorrence. REVOLT'ED, pp.: ADJ. turned away from allegiance or duty; shocked. REVOLT'INGLY, ad. *-lĭ*. REVOLT'ER, n. *-ėr*, one who revolts.—SYN. of 'revolt, n.': insurrection; sedition; revolution; rebellion; mutiny.

REVOLUTE, a. *rĕv'ō-lôt* [L. *revolūtus*, revolved—from *re*, back or again; *volvĕrĕ*, to roll]: in *bot.*, rolled backward from the margins upon the under surface, as the edges of certain leaves are in vernation; also REV'OLUTIVE, a. *-lô-tĭv*.

Revolute.

REVOLUTION, n. *rĕv'ō-lô'shŭn* [F. *révolution*, revolution—from L. *revolūtĭōnem*—from *revolūtus*, revolved—from *re*, back; *volvĕrĕ*, to roll: It. *rivoluzione*]: the motion of a body round any fixed point or centre; motion or course of anything which brings it back to the same state or point; change or alteration of system; an extensive and sudden change in the constitution of a country (see below). REV'OLU'TIONARY, a. *-ėr-ĭ*, pert. to a revolution, or tending to produce one: N. a revolutionist. REV'OLU'TIONIZE, v. *-īz*, to effect an extensive or entire change in the form or principles of a thing. REV'OLU'TIONIZING, imp. REV'OLU'TIONIZED, pp. *-īzd*. REV'OLU'TIONIST, n. *-ĭst*, one engaged in endeavoring to effect a change in the government of a country.

REVOLU'TION, in Politics: any extensive sudden change in the constitution of a country.—The English R. of the 17th c. began in the early part of the reign of Charles I., with the struggle between that king and his parliament: in 1642 the struggle became a civil war, in which the parliament obtained ascendency, and brought Charles to the block 1649. A commonwealth followed, under the protectorate of Oliver Cromwell, which was succeeded 1660 by the restoration of monarchy in the person of Charles II.; but the arbitrary rule of James II. brought the king and people again into antagonism: and James having fled the country, William III. was called to the throne by the R. of 1688, under such conditions and safeguards as secured the balance of the constitution.—The French R. was a violent reaction against that absolutism which in the course of time had supplanted the old feudal institutions of the country. It began with an outbreak of insurrectionary movements at Paris 1789, July, including the destruction of the Bastile. 1793, Jan. 21, King Louis XVI. was beheaded: the Christian religion was soon discarded, the sacredness of the Republic and worship of Reason solemnized, and the disastrous Reign of Terror (q.v.) and of blood followed, which was brought to an end 1794, when Robespierre himself suffered on the guillotine the fate to which he had condemned countless multitudes of his countrymen.—The American R. began 1775, by which the Brit. N. Amer. colonies, throwing off their dependence on Great Britain, became the United States (q.v.).—The French R. of 1830 drove Charles X. into exile, and raised Louis Philippe, Duke of Orleans, to the throne by the will of the people. In the French R. of 1848, France rose against Louis Philippe, and adopted for a time a republican govt.—the revolutionary contagion spreading temporarily over most of continental Europe. The third French republic also was established 1870–1 by a R.—By the Italian R. of 1859–60, the various minor sovereigns of Italy were driven into exile, and the whole of the peninsula became (with the incorporation of the Roman territories 1870) subject to King Victor Emmanuel.—In 1889, Nov., Brazil was changed from an empire to a republic by "a bloodless revolution."

REVOLU'TIONARY CAL'ENDAR, n.: calendar adopted by the French Republic: see CALENDAR.

REVOLU'TIONARY TRIBU'NAL: name given specially to the infamous court of judgment—not of justice—instituted by the French convention 1793, Mar., on a motion by Danton (q.v.), who considered that such a court had become necessary, inasmuch as the recent disasters of the national armies on the frontiers had led to dangerous conspiracies against the revolutionary govt. Its members were chosen from the various departments, and their appointment was ratified by the convention. Their function was to sit in judgment on all persons accused of crimes against the state, and from

their sentence, delivered with appalling promptitude, there was no appeal. During the 'Reign of Terror,' when Fouquier-Tinville (q.v.) was 'public accuser,' the R. T. acquired a horrible notoriety, soon abolishing almost all forms of justice, neither hearing witnesses on behalf of the accused, nor allowing him opportunity of defense, but blindly executing the orders of the 'Committee of Public Safety,' which was merely a tool in the hands of Robespierre (q.v.).—In the provinces, similar tribunals, under the name 'Revolutionary Committees,' were established, the commissaries-general of which, e.g., Carrier (q.v.), shot or drowned *suspects* in crowds.

REVOLU'TIONARY WAR: see UNITED STATES.

REVOLVE, v. *rĕ-vŏlv'* [L. *revolvĕrĕ*, to revolve—from *re*, back; *volvĕrĕ*, to roll]: to roll in a circle; to turn round, as on an axis; to move round a centre; to turn over and over, as in the mind; to meditate on. REVOLV'ING, imp.: ADJ. rolling or turning round; performing a revolution. REVOLVED', pp. *-vŏlvd'*. REVOLV'ENCY, n. *-vŏlv'ĕn-sĭ*, act, state, or principle of revolving. REVOLV'ER, n. *-ĕr*, a pistol having several chambers to one barrel, each containing a separate charge, and which can be discharged in rapid succession (see below). REVOLVING LIGHT, the light of a Light-house (q.v.), so arranged as to appear and disappear at certain intervals. REVOLVING STORMS, or CYCLONES, violent storms which, while advancing bodily in a definite direction, rotate about an axis with great rapidity.

REVOLV'ER, in Firearms: weapon which, by means of a revolving breech, or revolving barrels, can be made to fire more than once without reloading. The invention is not recent—specimens with even the present system of rotation being still in existence which were manufactured at the beginning of the 17th c. Probably the first R. to suggest itself was one in which several barrels were mounted on an axis, and made to revolve by the action of the trigger, so that their powder-pans came successively under the action of the lock. This principle was never entirely abandoned, and in the reign of George IV. a pistol was produced, called the 'Mariette,' which had from 4 to 24 small barrels bored in a solid mass of metal, made to revolve as the trigger was drawn back. At close quarters, such a pistol would doubtless have been useful; but its great weight and cumbrous mechanism rendered aim extremely unsteady.

Contemporaneously from the first with the revolving barrels went the formation of a revolving chamber or breech, pierced with several cylindrical apertures to receive the charges. Being made to revolve, each motion brought a chamber into line with the one barrel, common to all, whereupon the weapon was ready for discharge. Numerous patents for this principle have been taken out, including one by the renowned Marquis of Worcester 1661. Various improvements were made, especially in the mode of causing revolution; an Amer-

ican, Elisha H. Collier, patenting such a weapon in the United States and England about 1818. In 1835 Col. Samuel Colt, of Hartford, after years of experiment,

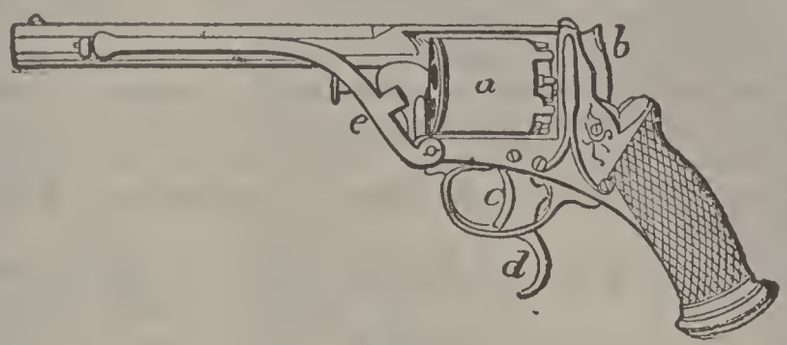


Fig. 1:
a, the chamber; *b*, hammer; *c*, trigger; *d*, spur for raising the hammer; *e*, lever-ramrod.

patented his world-renowned Colt's R., a great advance on all previous attempts, and substantially still in use. Colt's R. consists of one rifled barrel of considerable strength and a massive chamber perforated with six or seven barrels, which are brought successively into a line with the barrel by action of the trigger. Each chamber had its nipple for a cap, which is brought under the hammer by the same motion which brings the chamber or breech-piece round. In recent forms, the capped nipple disappears, the cap being contained within the cartridge. The hammer is discharged by the trigger, and acts nearly horizontally in a forward direction. Under the pistol is a fixed lever-ramrod, used in loading the chambers. Besides all this, by withdrawing a bolt, which can be done in a moment, the entire breech-piece can be taken out, and replaced by another ready-charged, so that, by carrying a spare breech-piece, a person may fire 12 shots in less time than another could fire 3 if he had to load between the shots.

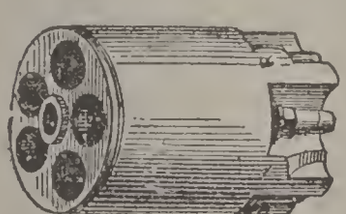


Fig. 2.—Chamber with Five Barrels.

Colt's R. has been described because it was the earliest form that was entirely successful. Many ingenious modifications have been introduced, and choice can now be made among various styles of perhaps equal excellence.

The R. principle has been applied to a kind of revolving guns for small projectiles, which are really aggregates of small-arms: see GATLING GUN: MACHINE GUN. Of this kind of gun, the best known is the French *mitrailleuse* or *mitrailleur*, used during the Franco-German war —having usually 25 barrels. The range of such guns in a level plain is not great; but among fortifications, or in a narrow valley, they may be used with very deadly effect.

REVOMIT, v. *rē-rŏm'ĭt* [*re*, again, and *vomit*]: to vomit or pour forth again.

REVULSION, n. *rĕ-rŭl'shŭn* [F. *révulsion*, revulsion—from L. *revulsiōnem*, a tearing off or away; *revulsus*, torn away—from *re*, back or again; *vellĕrĕ*, to pull]: the act of holding or drawing back; a violent separation; in *med.*, the act of turning or diverting a disease from one part of the body to another (see DERIVATION: COUNTER-IRRITANT). REVUL'SIVE, a. *-sĭv*, tending to cause revulsion: N. a medicine to cause a revulsion. REVUL'SIVELY, ad. *-lĭ*.

REWAH, *rā'wâ*, or BAGHELCUND: state in India, between the N.W. and the Central Provinces, subsidiary to the govt. of the latter, and having for its cap. the town of R., 70 m. s.w. from Allahabad, on the right bank of the Tons (pop. about 7,000). The town has remains of former magnificence, but even the walls and the rajah's palace are much decayed.—The state has 11,324 sq. m., and great part of it is well cultivated. Pop. 1,509,500.

REWARD, n. *rĕ-wawrd'* [*re*, again, and *award*: OF. *rewarder*; F. *regarder*, to regard]: a suitable return for kindness, merit, services, and the like; the fruits of labor or industry; a sum of money offered for the apprehension of a criminal, or for the recovery of lost property (see below): punishment: V. to recompense; to signify approval by a gift; to give in return, either good or evil; to remunerate; to requite; to punish; to repay evil. REWARD'ING, imp. REWARD'ED, pp. REWARD'ER, n. *-ẽr*, he who or that which rewards. REWARD'ABLE, a. *-a-bl*, that may be rewarded. REWARD'ABLENESS, n. *-bl-nĕs*, the state of being worthy of reward. REWARD'LESS, a. *-lĕs*, without a reward; having no reward.—SYN. of 'reward, n.': compensation; remuneration; pay; recompense; punishment; retribution; requital; satisfaction; guerdon.

REWARD', in Law: recompense awarded by authority of law for some act in the interest of the commonwealth; in particular for detection of crime: a R. may be offered either by public authority or by private persons (but see COMPOUNDING OF FELONY). A witness testifying in a criminal cause in hope of a R. is a competent witness. Courts will enforce the fulfilment of an offer of R.; but such offer may be revoked at pleasure. In the United States generally it is the state executive or the sheriffs of counties, or the supervisors or selectmen of towns, etc., that offer rewards on behalf of the public; and neither executive officers, courts, nor judges have authority to make compensation to citizens for their exertions in bringing offenders to punishment, except when there is a public offer of R.—In England the practice is different. By an English act of parliament of 1827, whenever it appears to a court of assize that a person has been active in apprehending offenders charged with murder, or with feloniously shooting, stabbing,

cutting, wounding, or poisoning, or with rape, burglary, housebreaking, robbery, arson, or cattle-stealing, or with receiving stolen goods, the court may order the sheriff of the county to pay to such person a sum of money, to compensate his expenses, exertions, and loss of time. If any man happen to be killed while endeavoring to apprehend a criminal charged with any of these offenses, the court may also order a sum to be paid to the widow or child.

REWORD, v. *rē-wėrd'* [*re*, and *word*]: in *OE.*, to repeat in the same words.

REWRITE, v. *rē-rīt'* [*re*, again, and *write*]: to write a second time.

REX, n. *rĕks* [L.]: a king.

REX'FORD, Eben Eugene: American writer: b. Johnsburg, N. Y., 1848, July 16. He was educated at Lawrence University, Appleton, Wis., and began to write for the press at 14. He has published: *Brother and Lover*, verse (1886); *Grandmother's Garden*, verse (1887); *John Fielding and His Enemy* (1888); *The Swamp Secret* (1897); *Flowers: How to Grow Them* (1898); *Into the Light* (1899); etc. He wrote the popular songs, *Silver Threads Among the Gold* and *Only a Pansy Blossom.*

REYES, Rafael: officially proclaimed as president of Colombia 1904, July 4, and inaugurated Aug. 7; an explorer, soldier, and statesman. Beside the public service rendered by him when he traveled during several years in unknown parts of the Amazon basin, the facts in his career which deserve special notice are the following: He was commander-in-chief of the Colombian army; was sent to Washington, after Colombia had lost Panamá, to 'save whatever he could from the wreck'; and in this patriotic effort he was certainly not altogether unsuccessful, since he gained courage to advocate on his return to Bogotá, the policy indicated in the report which he submitted to his government. He advocated, sensibly, courageously, and magnanimously, a frank acknowledgment by his people of their own blundering which had contributed to the disaster; and he continued to show his people how the natural resources of the vast territory still remaining in their possession could be developed by attracting foreign capital. He succeeded. The very great, imperfectly defined powers of the presidency were entrusted to him, despite the old ultra conservatives' hostility to foreign enterprise, and despite the suicidal scheme of the liberals for permitting Colombia to be absorbed by Venezuela and Ecuador. His success saved Colombia from a future of isolation and stagnation, on the one hand, or, on the other hand, nearly complete loss of identity. President Amador of Panamá and President Reyes exchanged congratulatory messages in August, and the American minister was received at Bogotá in 1904, December.

REY'KIAVIK. See ICELAND.

REYNARD [*rā'nard* or *rĕn'ard*] THE FOX: the name of an epic fable in which the characters are animals, the fox being the hero, and which in various forms was extremely popular during the Middle Ages, and for many years afterward. The latest version of the story, and that which indeed supplanted all the rest, is in the Low German dialect, and was printed at Lübeck in 1498 under the title of *Reynke de Vos*. The author calls himself Henrik van Alkmer, schoolmaster and tutor to the Duke of Lorraine, but it is believed that this is merely a pseudonym, and that the real author was Hermann Barkhusen, town-clerk of Rostock, and printer there. The *Reynke de Vos* is in verse, and founded on the oldest Flemish or Dutch redaction of the story in prose. It relates the adventures of the fox *Reynke* at the court of the king of beasts, the lion, and details with great spirit and humor the cunning modes in which the hero contrives to outwit his enemies, and to gain the favor of his credulous sovereign. The poem may be regarded, with Carlyle, as 'a parody of human life.' There is no personal satire in it, but the allusions to the weak points in the social, religious, and political life of the time are numerous and unmistakable. The fables of Æsop are one of the best known examples of the tendency to represent animals as talking and acting like human beings; but it appears that the beast-fable first took on an epic form among the German races, especially the Franks, by whom it was carried to the Low Countries and the adjacent parts of France, where it took firm root. In the 10th and 11th c. the monks of France gave a satirical and didactic turn to the fable, and some Latin poems in which it is so treated are still extant. In these much of the satire is aimed at the pope, the hierarchy, and the powerful Cistercian order. In the mouth of the Franco-Flemish people, however, the fable kept itself clear of such allusions, and soon took on a more purely epic form, aiming its satire at human failings in general. In 1170 the story in this more purely epic form appeared in Germany under the title of *Isengrîmes Nôt*, and somewhat later again in Flemish. In Germany the beast-fable could not maintain its ground side by side with the Swabian court poetry, and was soon given up; while the rhymed *Reinaert* of the Low Countries, in accordance with an altered taste, was turned into a prose narrative, *De Hystorie van Reinaert de Vos* (1479). This was soon after translated into English by Caxton, and printed by him at Westminster in 1481. The fable now returned once more to Germany, where the Low German version of Barkhusen took the place of all others. It was translated (1794) into German hexameters by Goethe, who called it the *Unheilige Weltbibel*, in his *Reineke Fuchs*. His translation has been turned into English heroic meter by T. J. Arnold (1870).

REYNOLDS, *rĕn′olz*, JOHN FULTON: soldier: 1820, Sep. 20—1863, July 1; b. Lancaster, Penn. He graduated from West Point 1841, served under Gen. Taylor in the Mexican war, and was brevetted capt. and major for gallantry at Monterey and Buena Vista. After several years on the frontier, he was stationed at West Point 1859. In the civil war he led a brigade in the Peninsular campaign, was a prisoner 1862, June—Aug., and was then exchanged. At the second battle of Bull Run and in the Maryland campaign he commanded a division, and commanded the 1st corps at the battle of Fredericksburg. In the battle of Gettysburg, just as he had arranged his troops and was cheering them to the assault, he was killed by a rifle-ball. In his honor a bronze statue was erected by the 1st corps, and a granite shaft by the state of Penn., at Gettysburg; and a bronze equestrian statue of him has been placed in front of the city hall in Philadelphia. By various promotions he reached the rank of maj.gen. vols. 1862, Nov. 29. He was one of the most gallant, able, and popular officers of the army.

REYN′OLDS, JOSEPH JONES: soldier: b. Flemingsburg, Ky., 1822, Jan. 4. He graduated from West Point 1843, was with the U. S. troops in Texas 1845–6, was asst. prof. at West Point 1849–56, and resigned from the army in the latter year. He held a professorship in Washington Univ., St. Louis, till 1860. The following year he again entered the army, was promoted brig.gen. vols., participated in various engagements in the civil war, resigned 1862, Jan., but organized volunteers in Ind., and was commissioned col. the following Aug., and brig.gen. in Sep. He served in the Army of the Cumberland, was promoted maj.gen. vols., was in the battles of Chickamauga and Chattanooga, commanded the defenses of New Orleans during the first part of 1864, and had charge of the dept. of Arkansas 1864–66. In 1866, July, he was again appointed col. in the army, and in Sep. was mustered out of the volunteer service. He was in charge of the 5th milit. dist. 1867–72, was elected to the U. S. senate from Texas 1871, but declined to serve, and was in command of the dept. of the Platte 1872–76. He was brevetted brig.gen. and maj.gen. U. S. army for brilliant service at Chickamauga and Mission Ridge, and was retired 1877, June. D. 1899.

REYN′OLDS, Sir JOSHUA, P.R.A.: generally acknowledged as head of the English school of painting: 1723, July 16—1792, Feb. 23; b. Plympton Earl, Devonshire, England; son of the Rev. Samuel R., rector of Plympton, St. Mary, and master of the grammar school of Plympton. The rector intended his son for the medical profession, but Joshua, having early shown an ardent desire to be a painter, was 1741 placed under Hudson, principal portrait-painter of the day. After two years with this artist, he commenced on his own account as portrait-painter at Plymouth Dock, now Devonport, and

met great encouragement. In 1746 he went to London, and established himself in St. Martin's Lane; but 1749 accepted Commodore Keppel's invitation to sail with him to the Mediterranean station, and, on arrival in Leghorn, proceeded to Rome. He spent three diligent years in Italy. On his return to London, 1752, Oct., his works attracted great attention, eclipsing everything done there since Van Dyck's time. When the Royal Acad. was instituted 1769, he was elected pres.; was knighted by George III., and on Ramsay's death, 1784, succeeded him as painter to the king. He died in his house in Leicester Square, and, after lying in state at the Royal Acad., was interred in the crypt of St. Paul's. Sir Joshua lived in friendly intercourse with Johnson, Burke, and the leading men of his period. His literary works consist of 15 Discourses delivered in the Royal Academy; three essays contributed to the *Idler*, at Dr. Johnson's request; notes to Mason's translation of Du Fresnoy's *Art of Painting;* a few notes for Dr. Johnson's ed. of Shakespeare; and notes of his tour through Flanders 1781. In his writings there is much valuable information on art, imparted in an admirable manner; but he has been charged with laying down in them various rules, and holding up the works of certain schools as models for the student, while he himself did not carry out these precepts in his practice as an artist; and from this an unfair inference has been drawn, that from love of gain he cultivated portrait-painting, the most lucrative branch of the profession, and recommended others to follow what is generally believed to be a more arduous but less remunerative path of art. This accusation is most unjust: perhaps no other artist has handed down in writing so many practically useful maxims and observations on art. His paintings are numerous, and bear a very high value. There are nearly 700 engravings from R.'s pictures; most of them admirably rendered in mezzotint.—Northcote's *Life of Sir Joshua Reynolds* (2 vols. 8vo, Lond. 1819); Cunningham's *Lives of British Painters, Sculptors, and Architects* (Lond. 1854, vol. i.)

RHABARBARATE, a. *ra-bâr′ba-rāt* [L. *rha barbărum*, rhubarb (see RHUBARB)]: tinctured with rhubarb. RHABAR′BARIN, or RHABAR′BARINE, n. *-ba-rĭn*, chrysophanic acid.

RHABDOLOGY, n. *răb-dŏl′ŏ-jĭ* [Gr. *rhabdos*, a staff; *logos*, discourse]: the art of computing or numbering by means of Napier's *rods* or *bones*. RHABDOLOGIC, a. *răb′-dō-lŏj′ĭk*, pert. to rhabdology, or performed by it.

RHABDOMANCY, n. *răb′dō-măn′sĭ* [Gr. *rhabdos*, a rod; *manteĭa*, divination; *mantis*, a prophet]: divination by a rod or wand, generally of witch-hazel, to indicate where metals, minerals, or water may be found in the earth—a superstitious practice not yet altogether abandoned; called also *met′allos′copy* or *hydros′copy*: see DIVINING-ROD.

RHABDOPHORA, *n.* plu. *răb-dŏf'ŏ-ra* [Gr. *rhabaos*, a rod; *phoros*, bearing—from *phcrō*, I bear]: a name for the Graptolites, because they commonly possess a chitinous rod or axis supporting the perisarc.

RHACHITIS, *ra-kī'tĭs:* see RACHITIS (under RACHIS) —but the former is the proper spelling.

RHADAMANTHUS, *rad-ă-măn'thŭs:* mythical personage, son of Zeus and Europa, and brother of Minos (q.v.). He settled in Bœotia, where he married Alcmene. So great was his reputation during life for the exercise of justice, that after death he was appointed a judge in the under-world, with Minos and Æacus.

RHADAMANTINE, a. *răd-a-măn'tĭn*, or RHADAMAN'THINE, a. *-thĭn* [*Rhadamanthus*, in *a. myth.*, a son of Jupiter]: strictly just; severe as a judgment of Rhadamanthus, one of the three judges in the infernal regions.

RHÆTIA, *rē'shĭ-â:* ancient tribal district, comprising an extensive territory in the Alpine regions, separating the valleys of the Po and the Danube. It included the modern Swiss canton of the Grisons and the Austrian province of Tyrol, and at one time extended from Lakes Como and Garda to Lake Constance, and along the n. slope of the Alps to the Danube. The Rhætians were virtually independent until conquered by Augustus, with other Alpine tribes, B.C. 15, when R. became a province of the Roman empire. Little is known of the origin or history of the Rhætians, but they are supposed to have been of Etruscan origin, and occupying at first the plains of the Po, but driven into the mountains by the Gauls, and at that time assumed their name from a leader Rhætus.

RHÆTIAN, a. *rē'shĭ-an:* pertaining to Rhætia.

RHÆTIC BEDS, *rē'tĭk bĕdz:* in *geol.*, a term generally applied to the marine *passage-beds* which lie between the Trias and Lias, and which are so called from their extensive development in the *Rhætic* Alps, now grouped with the Trias.

RHAMNACEÆ, *răm-nā'sē-ē* [Gr. *rhamnos*, kind of thorn or prickly shrub]: natural order of exogenous plants, consisting of trees or shrubs; often spiny; with simple, generally alternate leaves, and stipules minute or lacking. The flowers are small, generally green. The calyx is 4-5 cleft; the petals distinct, hood-shaped, or convolute, inserted into the throat of the calyx, occasionally lacking. The stamens are equal in number to the petals, and opposite to them; the disk is fleshy; the ovary is superior, or half-superior, with two, three, or four cells; the ovules solitary. The fruit is fleshy, and does not open when ripe, or dry and separating into three parts. This order contains about 250 known species, natives of temperate and tropical countries.

Some are used in dyeing (see BUCKTHORN: FRENCH BERRIES), some in medicine (see RED ROOT), and the fruit of some is pleasant (see JUJUBE); while *Hovenia dulcis*, native of China and Japan, is remarkable for the thickening of its flower-stalks after flowering, so as to form a succulent sweet red pulp, with flavor resembling that of a pear. RHAMNINE, n. *răm'nĭn*, crystalline principle obtained from buckthorn-berries.

Rhamnus frangula.

RHAMPHAS'TIDÆ: see TOUCAN.

RHAMPSINITUS, *rămp-sĭ-nī'tŭs*: Greek name of the Egyptian monarch Rameses III., first king of the 20th dynasty, and builder of the great palace at Medinet-Habu (see RAMESES). According to Herodotus, he placed two colossal statues 25 cubits high in front of the w. vestibule of the Hephæsteum at Memphis. He was the richest of Egyptian kings, having amassed 400,000 talents, or nearly $375,000,000—an incredible sum for that period: this wealth was, however, probably in jewels as well as the precious metals, for both are recorded on the walls of the treasury of Medinet-Habu. To secure this enormous treasure, he built a treasury of stone, one side of which adjoined the wall of his palace. In connection with this is narrated a story which rather resembles the tale of Ali Baba in the *Arabian Nights* than the sober narrative of history. The story was told to Herodotus by the Egyptian dragomen of the days of the Father of History, who naïvely doubts its veracity; but notwithstanding some of the German researches, which attempt to connect it with Hellenic myths of the brothers Agamedes and Trophonios, it is believed to be essentially Egyptian. R. is said to have descended to Hades, and to have played at draughts with Isis, or Ceres, and he is so represented on the walls of his palace at Medinet-Habu. His return was celebrated as a festival. Herodotus, who has inverted and confused the whole history of Egypt, calls R. son of Proteus and predecessor of Cheops, placing him 16 dynasties earlier than he should be. According to Lepsius, he reigned about B.C. 1275. According to Diodorus, R. was called Remphis, or rather Rempsis (Ramses), and by Pliny Ramses, in whose reign Troy was taken.

Pliny, *Hist. Nat.*, xxxvi. 8, 14, 2; Herodotus, ii. 121–124; Diodorus, i. 62; Champollion, *Not. Descr.*; Burton, *Exa. Hier.*; Sir G. Wilkinson, *Manners and Customs*, i. 121, etc.; Lepsius, *Einleit.*, 299, etc.

RHAPONTICINE, n. *ra-pŏn'tĭ-sĭn* [L. *rhapontĭcum*, rhubarb]: the yellow substance which water extracts from rhubarb.

RHAP'SODISTS, in Ancient Greece: a class of persons who earned their bread by going about from place to place, reciting, in a sort of musical chant, the epic ballads of Homer and other ancient poets. They were like the wandering minstrels of the middle ages, except that the latter were generally the authors of the compositions which they sung. The Rhapsodists were long a respected and venerated body, but lost their importance, and consequently their character, when the Homeric songs, after being written down, and perhaps woven together into their present form, by the scholars at the court of Peisistratos, became generally known to the Greek world through the medium of manuscript copies. Each ballad, or at least as much as could conveniently be remembered and recited at one time, was termed a 'rhapsody,' whence the application of the term to the separate books of the *Iliad* and *Odyssey*, in which usage it is equivalent to the *Fytte* or *Canto* of Scott and Byron.

RHAPSODY, n. *răp'sō-dĭ* [Gr. *rhapsōdĭă*, a term applied by the Greeks to a book of the *Iliad* or *Odyssey*, the chanting of poems; *rhapsōdos*, a bard—from *rhaptō*, I stitch together; *ōdē*, a poem or song]: a confused jumble of words or sentences without dependence or natural connection; any rambling composition. RHAP'SODIST, n. *-dĭst*, one who speaks or writes in an unconnected way: specially in anc. Greece (see RHAPSODISTS). RHAPSODICAL, a. *răp-sŏd'ĭ-kal*, or RHAPSOD'IC, a. *-ĭk*, consisting of rhapsody; unconnected; rambling. RHAPSOD'ICALLY, ad. *-kal-lĭ*. RHAPSODIZE, v. *răp'sō-dīz*, to write or utter rhapsodies. RHAP'SODIZING, imp. RHAP'SODIZED, pp. *-dīzd*. RHAP'SODOMAN'CY, n. *-măn'sĭ* [Gr. *manteï'a*, divination]: divination by means of verses.

RHAT'ANY ROOT. See RATANY.

RHEA, n. *rē'a*. See RAMIE.

RHEA: the generic and usual book-name of the South American ostriches or nandus, which, although true ratite birds and occupying the place of ostriches in the American avifauna, yet differ so greatly from the African species that ornithologists universally rank them as a distinct family (*Rheidæ*) or even order (*Rheæ*). Conforming to the general type of the ostriches, the rheas differ in having three toes with large claws, the head and neck fully feathered, the flowing plumes absent from the wings, and especially the tail, the ischiatic instead of the pubic bones forming the pelvic symphysis and the palatal structure peculiar in several respects. Three species of *Rhea* have been described: *R. americana*, found throughout the greater part of South America; *R. macrorhyncha*, which is confined to northeast Brazil and is distinguished by its darker color and longer bill; and *R. darwini*, of

southern Argentina, which is smaller and has tarsi covered with small scales instead of scutes as have the others. The newly hatched young of the latter are said to have the legs feathered to the toes. Rheas are known to the natives as nandus or emas (the latter a corruption of emu introduced by the Portuguese), and live in small parties on the pampas and dry plains, where they associate with wild horses, deer, and guanacos. In general habits they closely resemble the ostriches (q.v.), but usually run with the wings lowered instead of elevated. They are said to be able to swim across wide rivers. Because of the well-developed syrinx, which is absent in the ostriches, the male rheas have a loud, resonant call, especially heard during the mating season, when they also fight viciously. They are polygamous and the male incubates the score or more of eggs deposited by several females in one nest. They are omnivorous. Although lacking the precious plumes of the ostrich the feathers of the rhea have a commercial value in the manufacture of feather dusters. Many thousands are killed by shooting or with the bolos, or are run down with hounds or horses and clubbed to death. In many places they are threatened with extinction; but, although they breed readily in confinement, no efforts to raise rheas on a commercial scale appear to have been made.

RHEA LETTER, The: in American history, a famous political episode of the time of the Monroe administration. On Jan. 6, 1818, Andrew Jackson, then army department commander in the southwest, wrote to President Monroe regarding the Seminole troubles in Florida and advising the prompt seizure of East Florida, which he declared could be done 'without implicating the government.' He offered to accomplish the seizure himself within 60 days, if it should be indicated to him that it were desirable. John Rhea, a congressman from Tennessee, was the secret channel through which he hoped Monroe's assent might be signified. It was not. In 1831, during Jackson's administration, in the height of his quarrel with Calhoun, which turned in part upon the Seminole affair, Rhea wrote to Monroe, hoping to elicit from him something that would implicate him as approving Jackson's plan. Monroe, on his death-bed in New York, denounced Rhea's insinuations as utterly false.

RHEA: an ancient Cretan earth-goddess, daughter of Uranus and Gæa, wife of her brother the Titan Cronus, and by him mother of the Olympian deities Zeus, Hades, Poseidon, Hera, Hestia, Demeter. She was early identified with the Asiatic nature-goddess Cybele, the Great Mother, who was worshipped on mountains in Mysia, Lydia, and Phrygia. Her Cretan *Curetes* corresponded to the Phrygian *Corybantes*, many of whom mutilated themselves like Attis in the frenzy of their orgies. Rhea was supposed at first to make her home in the towering hills of Asia Minor. It was her delight to tame the

ferocious beasts found in these wildernesses, as well as to protect the fair towns lying in their valleys. Thus she became known as Mater Turrita, and was represented as wearing a crown, turreted like a wall. Rhea's supposed love for the Phrygian shepherd, Attis, gave much color to her worship. In Pessinus, in Phrygia, there was a cave under Mount Dindymon, where was a large stone supposed to be the heaven-sent image of the goddess, as well as the tomb of Attis.

RHEIMS, or REIMS, *rēmz:* city and archiepiscopal see, dept. of Marne, France; on the Vesle (tributary of the Aisne), 107 m. e.n.e. of Paris, by the Paris and Strasbourg railway. This very ancient city is built on the site of *Durocortorum,* mentioned by Julius Cæsar (*De Bello Gallico,* vi. 44) as cap. of the Remi, from which people it subsequently took its present name. Christianity may have found entrance into Rheims, at an earlier period, but not till the middle of the 4th century did Rheims become a bishop's see. Under the Frank rule it was an important place, and it acquired religious interest as the scene of the baptism of Clovis and his chief officers by the bp., Saint Remy, 496. In the 8th century it became an archbishopric, and from 1179, in which year Philip Augustus was there solemnly crowned, it became the place for the coronation of the kings of France, till the time of Charles X.—a vessel of secred oil, called *la Sainte Ampoule,* to which a miraculous origin was ascribed, being preserved for the purpose. The only sovereigns in the long series, to the revolution of 1830, not crowned at Rheims were Henry IV., Napoleon I., and Louis XVIII. During the frenzy of the Revolution, the cathedral was attacked by the populace, and the sainte ampoule destroyed, in detestation of royalty; and in 1830, the ceremony of the coronation at Rheims was abolished. Rheims is one of the principal entrepôts for the wines of Champagne, and the hills which surround the town are planted with vineyards. It is one of the great centres of French woolen manufacture, and its woolen goods, mixed fabrics in silk and wool, merinoes, etc., are known in commerce as *Articles de Reims.* The town is well built, and is picturesque from the material employed in building—the chalk-stone of the district—and from the prevalence of the older style of domestic architecture. Its most striking public building is the cathedral, which, though still lacking the towers of the original design, is one of the finest extant specimens of Gothic architecture. It was built in the first half of the 13th century. Its nave is 466 ft. long by 99 ft. in breadth, with a transept of 160 ft., and the height is 144 ft. Its grandest features are the w. front, which is almost unrivalled, and the Angel Tower, which rises 59 ft. above the lofty roof. The stained glass is remarkable for beauty; the baptismal fonts are exquisite, and the organ is one of the finest in France. The church of St. Remy is of greater age, and

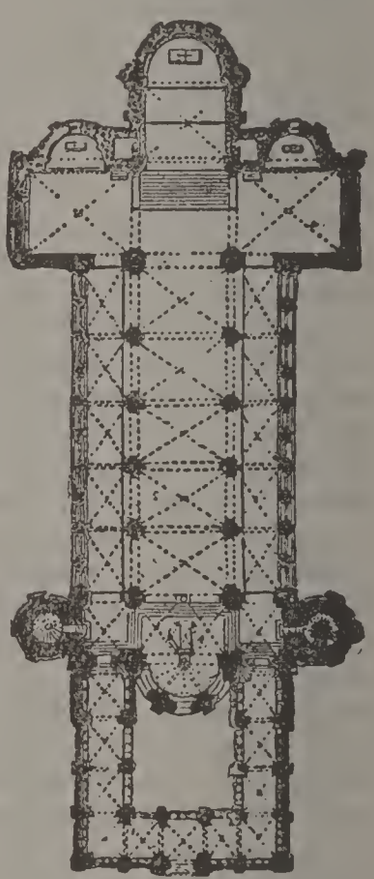
nearly of equal size, but of less architectural pretension. The archiepiscopal province of R. comprises the sees of Soissons, Chalons, Beauvais, and Amiens. Pop. (1881) 93,683; (1891) 104,186; (1901) 108,385.

RHEINGAU, *rīn'gow:* district along the right bank of the Rhine, formerly belonging to the archbishopric of Mainz, now forming the administrative dist. of Wiesbaden, in the Prussian province of Hessen-Nassau. R. is about 12 m. long, 6 broad. This district, one of the richest in Germany, protected by mountains from the n. and e. winds, and exposed to the mid-day sun, produces wines of the best quality.

RHEIN-HESSE: see HESSE-DARMSTADT.

RHENISH, a. *rĕn'ish:* pert. to the river *Rhine:* N. wine from the vineyards in the districts of the Rhine: see RHINE-WINE.

RHEN'ISH ARCHITECTURE: architectural style of the countries bordering on the Rhine when the arts first revived after the fall of the Roman empire. Being, at the time of Charlemagne, part of the same empire with Lombardy, the arts of that country (see LOMBARD ARCHITECTURE) soon spread northward, and similar buildings sprang up n. of the Alps. There are almost no traces of architecture in Germany before the time of Charlemagne. It received great encouragement from him and his successors, and the Rhenish style made great progress up till the beginning of the 13th c., when the fashion of copying the Gothic architecture of France superseded it. It is, however, a well-marked style, and is complete and perfect in itself. Like the Lombard style, it is round-arched, and has some remarkable peculiarities. The earliest churches seem to have been circular (like the Dom at Aix-la-Chapelle, built by Charlemagne); later the circular church was absorbed into the Basilica, or rectangular church (see ROMANESQUE ARCHITECTURE), in the form of a *western* apse. Most German churches thus have *two apses*—an eastern and a western. They also have a number of small circular or octagonal towers, which seem similar in origin to the Round Towers of Ireland. They exemplify in a remarkable manner the arrangements of an ancient plan of the 9th c., found in the monastery of St.



Plan of Church at Laach.

Gall, and supposed to have been sent to the abbot, as a design for a perfect monastery, to aid him in carrying out his new buildings. The arcaded galleries at the

Elevation of Church at Laach.

eaves, and the richly carved capitals, are among the most beautiful features of the style. Examples are very numerous from about A D. 1000 to 1200. The three great types of the style are the cathedrals of Mainz, Worms, and Speyer. The last is a magnificent building, 435 ft. long by 125 ft. wide, with a nave 45 ft. wide and 105 ft. high. It is grand and simple, and one of the most impressive buildings in existence. There are also numerous fine examples of the style at Cologne—the Apostles' Church, Sta Maria in Capitulo, and St. Martin's, being among the best examples of Rhenish architecture. In the church at Laach (see fig.) the vaults being small, the different spans were managed (though with round arches) by stilting the springing ; but in great buildings like Speyer and Worms, the vaults are necessarily square in plan, in

Rhenish Architecture (secular).

this round-arched style, and the nave embraces in each of its bays two arches of the side aisles. From the use of the round arch and solid walls, the exteriors are free from the great mass of buttresses used in Gothic buildings, and the real forms are distinctly seen.

RHEN'ISH CONFEDERA'TION: see CONFEDERATION OF THE RHINE.

RHENISH PRUSSIA, *rĕn'ĭsh prŭsh'ya or prô'shĭ-a* (Ger. *Rheinprovinz,* or *Rheinpreussen*): most western and most thickly peopled of the provinces of Prussia; along the banks of the Rhine; bounded w. by Belgium and the Netherlands; 10,400 sq. m. In the south, the surface is mountainous, the principal ranges being the Hundsrück, the Eifelgebirge, and branches of the Westerwald. The largest river is the Rhine, which flows n.n.w. through the province for 200 m., and receives many affluents. The surface is mountainous, except in the extreme n., and the soil of the higher mountain-tracts barely supports the inhabitants; while that of the valleys of the Rhine, Moselle, and Nahe are very fruitful, and the flat districts in the n. are most productive in grain. Timber and minerals, including lead, copper, zinc, coal, etc., abound; and the warm and hot sulphur-springs of Aix (q.v.) and Burtscheid (q.v.) have European reputation. Industry and manufactures are prosecuted with the utmost energy, and with great success. The cotton manufactures of the Wupperthal, the silk manufactures of Krefeld and vicinity, and the woolen cloth and cashmere manufactures of the dist. of Aix, are famous. R. P. came into the possession of Prussia by the treaty of Vienna 1815. It comprises the former duchies of Cleves, Gelders, and Berg, the principalities of Mörs and Lichtenberg, the n. and middle parts of the former archbishopric of Cologne, numerous lordships, portions from the four French depts. of Rhein-Mosel, Mosel des Forêts, and Saar, etc., and also known as the PROVINCE OF THE RHINE, is divided into the 5 govts. or districts of Coblentz, Treves, Cologne, Aachen, and Düsseldorf. Coblentz is the administrative capital and Cologne the commercial capital. Nearly 2,500 m. of railways facilitate the commerce and trade of the province. Pop. 5,759,000, comprising half-a-million of Flemish blood and 10,000 Walloons.

RHENSE: village of Germany, on the Rhine, in the district of Coblentz, Prussia, celebrated for the diet held there 1338, July, which declared against the necessity of Papal confirmation for the election of German King and Holy Roman Emperor, when a majority of electoral votes had been cast.

RHEOMETER, n. *rē-ŏm′ĕ-tĕr* [Gr. *rhĕŏs*, a current—from *rhein*, to flow; *metron*, a measure]: an instrument for measuring the intensity of a galvanic current. RHEOM′ETRY, n. *-ĕ-trĭ*, the method of determining the force of galvanic currents. RHEOMOTOR, n. *rē′ō-mō′tŏr* [L. *mōtor*, a mover—from *movĕō*, I move]: the apparatus by which an electrical or galvanic current is originated. RHEOCHORD, n. *rē′o-kawrd* [prefix *rheo-*; Eng. *chord*]: an instrument, consisting of two platinum wires, used in measuring electro-magnetic resistances. RHE′OPHORE, n. *-fōr* [Gr. *phorĕō*, I bear along]: Ampère's term for the connecting-wire of an electric or voltaic apparatus. RHE′OSCOPE, n. *-skōp* [Gr. *skopĕō*, I view]: an apparatus for ascertaining the pressure of a galvanic current, or merely its existence. RHE′OSTAT, n. *-stăt* [Gr. *statos*, that stands]: an apparatus for enabling a galvanic needle to be kept at the same point during an experiment; an instr. for measuring electrical resistance. RHE′OTOME, n. *-tōm* [Gr. *tomē*, a cutting]: an instr. for periodically interrupting an electric current. RHE′OTROPE, n. *-trōp* [Gr. *tropē*, a turn]: an instr. for reversing the direction of a voltaic current.

RHESUS MONKEY, *rē′sŭs mŭng′kĭ* (*Macacus Rhesus*): East Indian monkey, extending further n. than any other species except the Entellus (q.v.), or Hanuman (q.v.), and, like it, partially migratory, visiting regions of the Himalaya in summer, which are far too cold for it in winter.

Rhesus Monkey (*Macacus Rhesus*).

It is held in almost as great veneration by the natives of India as the Hanuman itself; and the killing of one of these animals is apt to arouse the greatest popular indignation. The monkeys live in troops in the forests, chiefly in hilly districts, and visit the cultivated grounds to carry away grain and other produce. The R. M. has stout form, stout limbs, short ears, short tail, large callosities, skin hanging loose about the throat and belly, hair rather long, back brownish, lower part of the back and the haunches bright chestnut, or almost orange, shoulders and arms lighter. It is one of the most intelligent and mischievous of monkeys.

RHETORIC, n. *rĕt′ŏ-rĭk* [F. *rhétorique*, rhetoric—from L. *rhētŏr′ĭcă;* Gr. *rhētŏr′ĭkē*, oratory—from *rhētōr*, an orator; *rheō*, I say, I speak]: science of oratory; art of composition written or spoken; art of speaking in public with propriety, elegance, and force; power of persuasion and attraction in speech: in its broadest sense the theory of eloquence. It aims at expounding the rules which should govern all prose composition or speech designed to influence the judgments or the feelings of men; therefore treats of everything that relates to beauty or force of style—e. g., accuracy of expression, structure of periods, and figures of speech. But in a narrower sense R. concerns the fundamental principles according to which particular discourses of an oratorical kind are composed. RHETORICAL, a. *rĕ-tŏr′ĭ-kăl*, pert. to rhetoric; persuasive; figurative. RHETOR′ICALLY, ad. *-lĭ*. RHETORICIAN, n. *rĕt′ō-rĭsh′ăn*, one skilled in the art of rhetoric.

RHEUM, n. *rôm* [Gr. *rheuma*, that which flows—from *rhĕō*, I flow: F. *rhume*]: the increased action of the vessels of any organ of the body producing a flow of humors; usually applied to the increased secretions of the mucous glands caused by a cold. RHEUM′Y, a. *-ĭ*, pert. to or abounding in rheum; affected with rheum.

RHEUMATISM, *rū′ma-tizm*, n. [L. *rheumatismus*, rheum, Gr. *rheumatismos*, <rheuma; <rheō, flow]: rheumatism may be defined as variable, shifting, painful affections of the joints or muscles. There are few terms in medicine that have been so misunderstood as the word rheumatism. In a general way it has been employed to designate any painful affection of the joints or muscles and we therefore have the two forms of rheumatism, viz., articular and muscular rheumatism. Of the articular forms of rheumatism we have two, those of short duration or acute, and those of long duration or chronic. There are many painful processes of joints, which in the strict sense of the term are not rheumatism.

Strictly speaking, the term rheumatism applies to acute articular rheumatism or rheumatic fever which is an acute infectious but non-contagious disease characterized by an inflammation of one or more joints. The definition implies that it is caused by some infective agent. During the past 10 years a great deal of work has been done to determine just what organism is the cause of rheumatism. Some investigators have found one organism, others, another. The one which seems to be found most frequently was first discovered in 1900 by Payne and Poynton. It is a streprococcus or rather a diplococcus and has been given the name of microscoccus rheumaticus. Although this organism is found most frequently others have also been discovered, and it is very probable that rheumatism may be caused by a number of different bacteria which enter the body through some mucous membrane, spread by way of the circulation and in that way pass from joint to joint and frequently affect other parts of the body such as the heart, which because of its being

an integral part of the circulatory system is especially subject to infection. It may enter the body through the mucous membrane of the nose or throat or other parts of the respiratory or alimentary tracts. Rheumatism is frequently preceded by tonsilitis and it is very probable that the tonsil is the place through which the germ frequently gains access to the system and that the tonsilitis is simply the result of the inflammation produced while the germ is passing through. Although some bacterium is the exciting cause of rheumatism, it is a well-known fact that an attack of rheumatism is frequently dependent upon change of weather, it being especially prone to occur when the atmosphere is cold and damp. Simple exposure to cold will frequently produce an attack. This simply means that the germ which produces rheumatism probably remains in the system for a long time and that whenever the vitality of the system is lowered as is always the case when the heat disappears from the body too rapidly as in cold, damp weather, the germ becomes localized in the joints and other parts of the body and produces inflammation.

The Pathology of Rheumatism.—The joint is inflamed, there is an accumulation of a light-colored serous fluid in the synovial sac of the joint with sometimes a slight erosion of the cartilage. In about one-third to one-half of all cases there is an endocarditis or inflammation of the valves of the heart. Frequently also there is a pericarditis and myocarditis, occasionally also inflammation of the lungs, pleura and the membranes of the brain.

Symptoms of Rheumatism.—The attack usually sets in abruptly, but is sometimes preceded by irregular pains in the joints, sore throat and general feeling of malaise. As a rule, however, the fever rises rapidly up to 102° or 104° and one or more of the joints become swollen and painful. They are frequently so painful that they can scarcely be moved. The joints are not all attacked at the same time, but usually one joint after another is affected. The joints affected in the order of frequency are as follows: knee, ankle, shoulder, wrist, elbow, hip, hand, foot. The severe agonizing pain producing almost utter helplessness and the excessive sweating and perspiration make rheumatism one of the most distressing of diseases. The course of rheumatism is very variable, lasting sometimes for only a week—at other times for months. One attack does not produce immunity but predisposes the system to another attack. Sudden death in rheumatism is quite rare. The mortality is about two to three per cent. It produces its greatest harm by leaving the heart in a poor condition making it less capable of doing the work which it is frequently called upon to do.

Treatment of Rheumatism.—On account of the severity of the disease and the constant danger of involvement of the heart, the treatment of acute rheumatism should always be under the guidance of a competent physician. In a general way it may be said that the treatment con-

sists first of rest and the application of warmth to the affected parts; the use of chloroform liniment is frequently of value in taking away the pain, but it should not be applied with rubbing, because of the pain which it produces and the aggravation of the symptoms. The patient should have a well ventilated room, a soft warm bed and not be exposed to any draughts. The diet should consist principally of liquids such as milk, broths, oatmeal, barley water and lemonade. Meat should be used sparingly. The treatment usually consists in the giving of salicin or salicylate of soda together with what is called the alkaline treatment, which consists of the giving of alkalines such as the sodium or potassium bicarbonate. For the severe pains it is often necessary to use morphine or other derivatives of opium. As a rule patients are obliged to remain in bed about six weeks.

The condition called gonorrhœal rheumatism is caused by the gonococcus and is one of the unfavorable complications of rheumatism.

Chronic articular rheumatism may follow an attack of the acute form. It occurs especially among the older class, day-laborers and those whose occupation causes them to be exposed to coldness and dampness. The pain in chronic rheumatism is not so severe as in acute rheumatism and the joints are only slightly swollen and seldom reddened as in the acute form. The joints become stiff and this stiffness and pain is usually most marked after a period of rest and disappear to a certain extent after the use of the joints. As a disease it is not especially dangerous to the life of the individual and death is seldom caused by it; on the other hand it is but slightly affected by treatment. Frequently the pain and stiffness may be removed by counter-irritation. It is this form of rheumatism that is principally helped by hydrotherapeutic measures. The drinking of a large amount of water, especially if alkaline, the taking of baths followed by massage is particularly useful. Many of these patients are benefited by a stay of several weeks or months at some watering or bathing place.

Muscular rheumatism is a painful affection of the voluntary muscles. It is usually caused by exposure to coldness and dampness, and occurs especially in those people who are prone to rheumatism and gout. It is usually an acute process, although it sometimes becomes chronic. The pain may be a dull ache or it may be very intense. It is usually a local process and affects different muscles of the body. The three principal parts affected are represented by the three principal forms as follows:

1. *Lumbago*, which affects the muscles of the small of the back. It frequently comes on suddenly and when very severe incapacitates the patient.

2. *Stiff neck or torticollis* affecting the muscles on the front and side of the neck, occasionally also affecting the muscles of the back of the neck. Usually only one side is affected, causing the head to be turned in a peculiar manner

away from the side affected. When the patient desires to turn his head the body turns with it.

3. *Pleurodynia* involves the muscles between the ribs and sometimes also the muscles of the chest. It is usually limited to one side. It is painful especially because it is impossible to keep the chest still.

Treatment and Prevention.—The treatment consists principally in giving rest to the affected part and such remedies as relieve pain. Patients subject to muscular rheumatism should be warmly clad and avoid exposure to cold and dampness as much as possible.

RHEYDT, *rīt:* town of Rhenish Prussia, on the left bank of the Niers, and on the railway between Düsseldorf and Aix-la-Chapelle, 14 m. w. by s. from Düsseldorf. It has manufactures of silks and velvets, soap, glue, vinegar, and leather; also dyeworks. Pop. 34,034.

RHIGOLENE, n. *rĭg'o-lēn* [Gr. *rhigos,* frost, cold; L. *oleum,* oil]: a petroleum naphtha, introduced by Dr. H. J. Bigelow, of Boston, as a local anæsthetic. It is applied in the form of spray in minor operations producing intense cold by its evaporation.

RHIME: see Rime.

RHIN, Bas, *bâ răng* (Lower Rhine): formerly a frontier dept. of France, but now corresponding nearly to the German administrative dist. of Lower Alsace (*Nieder-Elsass*) in the imperial territory of Alsace-Lorraine: to the e. lies Baden, and w. are the French depts. Moselle, Meurthe, and Vosges. The area of Bas-Rhin, as a dept. of France, was 1,759 sq. m.; pop. (1866) 609,987: area of Lower Alsace 1841 sq. m.; pop. (1900) 659,432. This dist. lies almost wholly within the basin of the Rhine, which flows n. along its e. border. The e. portion of the dist. along the left bank of the Rhine, consists wholly of plains; while in the w. are the rugged and wooded heights which form the e. slopes of the Vosges Mountains. In the hilly regions are many beautiful valleys. The winters are long and cold; summers variable; autumns always fine. Cretinism and goître prevail in some parts, though less now than formerly. The country is unusually rich in agricultural and manufacturing resources and capabilities. A great variety of grains, fruits, and vegetables, including fine crops of hemp and tobacco, are grown extensively; and wines, red and white, the latter held in highest estimation, are produced abundantly. Manufactures, textile and other, are carried on on a grand scale. Spinning-mills, weaving factories for cotton, calico, woolen, and other fabrics, are exceedingly numerous, and foundries, arms and machine factories abound. The region recently occupied by the French depts. Haut-Rhin and Bas-Rhin constituted, prior to the treaty of Ryswick 1697, one of the most densely peopled and industrious portions of Germany, called in German, Elsass (Latin *Alsatia*). Ceded then to France, it became the French province of Alsace, which was at the Revolution subdivided into the two depart-

ments. So it remained till, in 1870, during the war between France and Germany, Bas-Rhin and Haut-Rhin were, with portions of the depts. Moselle, Meurthe, and Vosges, erected by the king of Prussia into the German general govt. of Alsace. When peace was concluded at Frankfurt, the repossessed German territory was not incorporated with any of the German states; but, after certain portions had been restored to France, formed a member of the new German Empire, with the title of the imperial territory (Reichsland) of Alsace-Lorraine (Elsass-Lothringen).

RHIN, HAUT, *ō răng* (UPPER RHINE): formerly a frontier dept. in e. France, but n w mostly comprehended within the German dist. of Upper Alsace. The area of Haut-Rhin was 1,586 sq. m.: pop. (1866) 530,285; area of Upper Alsace being 1,354 sq m.; pop. (1900) 495,209. The e. frontier is formed mostly by the Rhine, and the w. frontier by the Vosges Mts. After the Rhine, the principal river is the Ill, into which the streams from the Vosges flow. In the middle f th dist. the soil is fertile, and of the valleys of the w. some are exceedingly rich and productive. The vineyards are extensive, and much wine is produced. In agriculture, and in trade and manufactures, great activity and enterprise are manifested. At the treaty of Frankfurt, the cantons of Belfort, Delle, Giromagny, with 28 other communes, all formerly included in Haut-Rhin, were restored to France by Germany. The French remnant was then called 'Territory of Belfort,' but since 1878 is again Haut-Rhin.

RHINAL, a. *rī'nal* [Gr. *rhis* or *rhīna*, the nose]: of or pertaining to the nose. RHINALGIA, n. *rĭn-ăl'jĭ-a* [Gr. *algos*, pain]: pain in the nose.

RHINANTHUS, *rī-năn'thŭs*: genus of plants of nat. order *Scrophulariaceæ*, having an inflated 4-toothed calyx; the upper lip of the corolla compressed laterally, furnished on both sides below th tip with a straight tooth or lobe, the lower one plane and 3-lobed. The capsule is compressed and 2-celled. *R. crista-galli* is a common plant, an annual, 1–2 ft. high, seen in gardens, with yellow flowers, and rather large capsules, in which the seeds rattle when ripe, whence its name, *Yellow Rattle*. It is called also Cock's-comb, from its fringed bracts.

RHINE, *rīn* (*Rhenus*): most important river in Germany, and one of the most noted in Europe; rising in the Swiss canton of the Grisons, and after a n.n.w. course of about 750 m., falling into the German Ocean. The area of the R. basin, including its various feeders, which have been counted to the number of 12,000, is estimated at about 65,000 sq. m. The R. is divided into the Upper, Middle, and Lower R., the first term being applied to the river from its source to Basel; the second from Basel to Cologne; and the last from Cologne through the Netherlands to the sea, into which it empties by several mouths, forming an extensive delta. The head-waters of the Upper R. consist of three main streams, the Vorder R., the Mittler R., and the Hinter Rhine. The first and most easterly rises on Mount Crispalt, n.e. of Mount St. Gothard, 7,500 ft. above sea-level, and flowing e., bursts like a torrent through a deep ravine. At Dissentis, 12 m. from its source, it is joined by the Mittler R., or central branch, at the comparatively low level of 3,500 ft. At Reichenau, 50 m. from the source of the Vorder R., the stream is swelled by the third branch, Hinter R., which, taking its rise among the glaciers of the Vogelberg, flows 80 m. before it blends with the main branches. The Hinter R., considerably the longest of the upper waters, is deemed the chief source, and at its confluence with the other branch at Reichenau, the river first assumes the general name Rhine. At Coire, where the river takes a sudden turn northward, it is nearly 150 ft. wide, and navigable for rafts and flat boats. A little above the small town of Sargans, in St. Gall, it leaves the Grisons, and forming the boundary between the small principality of Lichtenstein and the Vorarlberg on the right, and St. Gall on the left, flows northward to Rheineck, where it enters the Boden See, or Lake of Constance, which may indeed be regarded as the river itself augmented in its course between Rheineck and Constance by the confluence of numerous streams. Emerging from the Upper Lake at Constance, the R. enters the Unter See, or Lower Lake, a few m. below, and following a westerly course, forms the boundary-line between Switzerland and the grand duchy of Baden; and after receiving the Thur, Töss, and Aar on the left, and the mountain torrents of the Wutach and Alb on the right, pursues its course to Basel. At Schaffhausen, about 13 m. from the western extremity of the Unter See, the waters of the river, rushing over a rock 70 ft. high, form the cataract known as Falls of Schaffhausen; while lower down the narrowing of the channel through the projection of rocks on either side gives rise to rapids both at Laufenburg, and at a point ten m. below it, at Höllenhacken, where the navigation is impeded for a considerable distance by the force of the cataracts. Below Basel, the R., turning again due n., separates Alsace-Lorraine from Baden, forms the e. boundary of Rhenish Bavaria, cuts the province of Rhine-Hesse in two, and flows between Hessen-Nassau and Rhenish Prussia, through which it afterward pursues a n.w. course. Before it reaches Cologne, it receives numerous tributaries—the

Ill, Wiese, Elz, Kinzig, Murg, Neckar, Main, Lahn, Moselle, etc.; and passes the cities Breisach, Strasburg, Germersheim, Spires, Mannheim, Worms, Oppenheim, Mainz, Bingen, Coblenz, and Bonn. In this middle part of its course, the river makes great bends, the current is rapid, and navigation is rendered difficult by numerous small islands and sandbanks, subject to changes of form and position. By agreement 1840 between France and Baden, the R. has been brought into its proper channel and considerably shortened. The valley through which the R. runs between steep banks from Mainz to Bonn, contains the picturesque scenery which has made this river so celebrated, and the vineyards whence the famous Rhenish wines are obtained. From Cologne to its mouths, the R. flows through a low level country, and soon after entering the Netherlands, divides into two arms; the left, called the Waal, uniting with the Maas near Fort Loevestein, and forming the Merwede or Merwe, which below Dordrecht takes the name Old Maas; the right arm, called the R., a little above Arnheim, throws off the New Yssel, originally a canal, cut by Drusus to connect the R. with the Old Yssel. Flowing on to Wijk bij Duurstede, the R. divides again into the Lek, which unites with the New Maas near Ysselmonde, and the Kromme R., which at Utrecht parts into the Vecht and the Old R., the latter as a small stream entering the North Sea by the Katwijk canal n.w. of Leyden. The delta of the R., which extends from about 51° 35′ to 52° 20′ n. lat., and occupies nearly 50,000 sq. m. of territory, belonging to the Dutch provinces of N. and S. Holland, Utrecht, and Guelderland, requires to be protected by strong embankments. Several canals connect the R. with the Rhone and Saone, the Scheldt, Meuse, and Danube, thus opening communication with France and Belgium on one side, and with the Netherlands and every part of Germany on the other. The commerce and navigation of the R., which are of vast extent and great importance, were formerly regulated by treaties between the different states through which it passes, all of which levied tolls on vessels and goods entering their respective territories, which accumulation of duties pressed heavily on the transit trade. Steam-navigation is, however, conducted with greater regularity and energy on the R. than on any other river of Germany; and of late years, since the main lines of railway on either side of the R. have been connected by railway bridges across the river, additional importance and extension have been given to the commercial relations of all the countries connected with the Rhine. Pontoon or boat bridges cross the river at Cologne, Mainz, Mannheim, and a few other places.

RHINE, Confederation of the: see Confederation of the Rhine.

RHINE, Province of the: see Rhenish Prussia.

RHINENCEPHALIC, a. *rī'nĕn-sĕf'a-lĭk* [Gr. *rhis* or *rhīna*, the nose; *engkeph'alos*, the brain—from *en*, in; *keph'ălē*, the head]: belonging to the nose and brain, applied to the prolongation of brain-substance which forms the olfactory nerves.

RHINE'-WINE: term of very general signification, applied, however, most frequently to wines produced in the Rheingau (q.v.). The most valued and costly of these are the Schloss-Johannisberger, Hochheimer, Kloster-Erbacher, Rudesheimer, Steinberger, Gräfenberger, Rauenthaler, Rothenberger, Scharlachberger, and Markobrunner. The red Rhine-wines, of which the Asmannshäuser is most celebrated, are not nearly so much prized as the white, neither have they the strength or bouquet of the latter. The wines of the Lower Rhine, below Düsseldorf, are generally inferior.

The term R.-W., in its general signification, includes the Pfalz and Moselle wines. It is now generally held in Germany that Rhine-wines that have been properly kept for three or four years are in the most wholesome condition for use; the very old stocks no longer find ready market except in Russia and England.

RHINO-, prefix, *rī-nō* [Gr. *rhis, rhinos*, the nose, the nostrils]: of or belonging to the nose or nostrils.

RHINO, n. *rī'nō:* a common cant term for 'money.'

RHINOCEROS, n. *rī-nŏs'ĕr-ŏs* [L. *rhīnoc'ĕros;* Gr. *rhīnok'ĕrōs*—from Gr. *rhis* or *rhīna*, the nose; *keras*, a horn]. large animal of Asia and Africa, named from the one or two solid fibrous horns which arm its snout. RHINOCERIAL, a. *rī'nō-sē'rĭ-al*, or RHINOCERICAL, a. *-sĕr'ĭ-kal*, pertaining to or resembling a rhinoceros.—*Rhinoceros* is the name of a genus of perissodactyl ungulates, containing the largest and most powerful of terrestrial mammalia, except the elephants. There are at least seven or eight existing species, all natives of warm parts of Asia, the Indian Archipelago, and Africa; and numerous fossil species have been discovered in the newest geological deposits. The form of the R. is clumsy and uncouth; its aspect dull and heavy. The limbs are thick and strong; each foot is terminated by three toes covered with broad hoof-like nails. The tail is small, and terminated by a small tuft. The ears are moderately large; the eyes very small. The head is large, the muzzle prolonged, and the nasal bones combine into an arch for the support of a horn, which, however, does not spring from them, but merely from the skin; a second horn, in some species, growing above it, in like manner springing from the skin, and resting for support on the bone of the forehead. The upper lip is more or less prolonged and prehensile, in some of the species so much so that it is capable of being used to pick up very small objects. The whole body, head, and limbs are covered with extremely thick and hard skin, which in none of the existing species exhibits more than mere traces of hair, though there is evidence that some of the extinct ones were covered with fur; and the hardness of the skin being such

that in some species it has not pliancy enough to permit the movements of the animal, it is in a manner jointed by means of folds on the neck, behind the shoulders, in front of the thighs, and on the limbs.

The horn of the R. is a remarkable organ, and a powerful weapon of offense and defense. With it the animal can root up bushes or small trees, the foliage or fruit of which it desires to eat. It is of a perfectly homogeneous structure (see HORNS), and solid, consisting of a material like consolidated hair.

The different species show some differences of dentition. None of the species have much intelligence. Although usually harmless, they are easily provoked, and show great capriciousness of temper. When irritated, they become very dangerous; and though usually slow in their movements, they can, on occasion, run rapidly. Their great weight and strength enable them to force their way through jungles, breaking down the smaller trees before

Rhinoceros (*R. Indicus*).

them. The hide is proof against the claws of the lion or tiger, and is not to be penetrated by a leaden bullet, except at very short distance, or in some of the thinner parts about the neck and chest. Bullets of iron or tin are used for shooting them.

The species of R. agree in being found sometimes solitary or in pairs, sometimes in little companies, never in large herds.

The INDIAN R. (*R. Indicus*), native of the continental parts of the E. Indies, lives chiefly in marshy jungles on the banks of lakes and rivers, often wallowing in the mud, with which it encases itself, apparently as a protection against insects, which annoy it notwithstanding the thickness of its hide. It is the largest known species of R., a large specimen being rather more than five ft. in height. The horn is sometimes 3 ft. in length, and 18 inches in circumference at the base. The Indian R. was known by very imperfect description to the ancient Greeks, receiving the inappropriate name *Indian Ass;* and from accounts of it the fable of the unicorn probably originated. Individuals have from time to time been brought alive to Europe,

and have proved moderately quiet and tractable, feeding with apparent satisfaction on moistened hay, vegetables, pulse, grain, etc.—The JAVANESE RHINOCEROS (*R. Javanicus*, or *R. Sondaicus*) is a somewhat smaller species, also one-horned. Sumatra has a two-horned species (*R. Sumatrensis*).—Different species of rhinoceros, all two-horned, are found in almost all parts of Africa, and one or more of them were known to the ancient Romans. —The BOVELE, or BLACK RHINOCEROS (*R. bicornis*, or *R. Africanus*), of s. Africa, is the smallest of the known species. It is of black color, and its first horn is rather thick than long, its second short and conical. It is a fierce and dangerous animal, capable of great activity, and more dreaded by the s. African hunter than the lion itself.—The KEITLOA (*R. Keitloa*), also of s. Africa, is larger, and has the two horns nearly equal in length, the foremost horn curved backward, the other forward. It is much dreaded for its strength and ferocity.—The WHITE RHINOCEROS (*R. Simus*), or MUCHUCO, or MONOOHO, is the largest of the well-ascertained African species.

No species of rhinoceros is prolific: one young one only is produced at birth, and the intervals are long. The flesh of the rhinoceros is used for food, the different species being variously esteemed. The skin is used in the E. Indies for shields; in s. Africa it is sliced into thongs.

The earliest remains of the rhinoceros are found in Miocene strata, and in the subsequent Tertiary deposits they frequently occur. Ten species have been described. A two-horned species was found by Pallas in the frozen gravel of Siberia, with the mammoth, still covered with a shaggy coat of long wool, and having its flesh preserved.

RHINOPLASTIC, a. *rī'nō-plăs'tĭk* [Gr. *rhis* or *rhīna*, the nose; *plastĭkos*, plastic—from *plassō*, I form]: nose-forming, applied to an operation in surgery by which the nose is renewed (see RHINOPLASTIC OPERATION). RHINOSCOPE, n. *rī'nō-skōp* [Gr. *skopĕō*, I view]: an instrument, consisting of an adapted oval or circular mirror, by which the back part of the nostrils may be examined. RHINOS'COPY, n. *-nŏs'kŏ-pĭ*, the examination of the back parts of the soft palate, the nose, etc., by means of the rhinoscope.

RHINOPLASTIC OPERATION, *rī'nō-plăs'tĭk:* in *surgery*, operation for restoration of a portion or the whole of the nose destroyed by accident or disease; it consists in transplantation of skin from an adjoining healthy part. When the whole nose has to be replaced, the following course is usually adopted. A triangular piece of leather is cut into the shape of the nose, and is extended on the forehead with its base uppermost; its boundaries, thus flattened, are marked out on the skin with ink. Any remains of the old nose are then pared away, and a deep groove cut round the margins of the nasal apertures. When the bleeding from these incisions

has stopped, the marked portion of the skin of the forehead must be carefully dissected away, till it hangs by a narrow strip between the eyebrows. When the bleeding from the forehead ceases, the flap is twisted on itself, so that the surface which was originally external may remain external in the new position, and its edges must be fastened with stitches into the grooves prepared for their reception. The nose thus made is to be supported with oiled lint, and well wrapped in flannel, to keep up the temperature. When complete adhesion has taken place, the twisted strip of skin may be cut through, or a little slip may be cut out of it, so that the surface may be uniformly smooth. When only a part of the nose, as one side only, or the septum, requires to be restored, modifications of the operation are required.

The rhinoplastic operation known as the *Taliacotian Operation,* from its having been performed first by Taliacotius, prof. of anatomy and surgery at Bologna, where he died 1553. The work in which the operation is described was not published till more than 40 years after his death. Instead of taking the skin from the forehead, he took it from the arm of the patient, and there is no reason why his operation, though inferior in many respects to that now adopted, should not be successful. The difficulty of keeping the arm sufficiently long in apposition with the face (about 20 days), was doubtless one reason for selecting the forehead as the part from which to take the skin.

RHIO, *rē′ō,* or RIOUW, *rē-ow′:* a seaport belonging to the Dutch, in the Indian Archipelago, on the islet of Tandjong Pinang, in a bay on the s. side of the Island of Bintang, 50 m. s.e. of Singapore. It is the capital of a Dutch residency, comprising the Rhio Archipelago, the Linga group, and the Tambelan, Anambas, and Natuna Islands, as well as the districts of Kampar, Siak, and Indragiri, on the e. coast of Sumatra. The population of the residency is estimated at 108,000.

RHIPIP′TERA. See STREPSIPTERA.

RHIZA, n. *rī′za* [Gr.]: a root.

RHIZANTHS, n. plu. *rī′zănths* [Gr. *rhiza,* a root; *anthos,* a flower]: class of flowering plants growing on the roots of other plants, including the largest known flower, *Rafflēsĭa.* RHIZANTHEÆ (RHIZOGENS of Lindley), remarkable nat. order of plants. They are parasitical, brown, yellow, or purple, never of green color, destitute of true leaves, and having cellular scales instead. The stem is amorphous and fungus-like; sometimes, as in Rafflesia (q.v.), there is no stem; but the flowers arise immediately from the surface of the branch or stem to which the plant is parasitically attached. Spiral vessels are either few or lacking, and the substance is chiefly cellular tissue. Lindley regards these plants as a class (Rhizogens) distinct [illegible] Phanerogamous plants

(*Exogens* and *Endogens*), and as one of the connecting links between them and the Cryptogamous plants (*Thallogens* and *Acrogens*). There are not many more than 50 known species in all, of which one or two are found in s. Europe, the others in Africa and warmer parts of Asia and America. *Cynomorium coccineum* (*Balanophoraceæ*) is found in Malta, and is the *Fungus Melitensis* of apothecaries, long noted for arresting hemorrhages. Others are likewise used as styptics. *Cytinus hypocistis* (*Cytinaceæ*) grows on the roots of species of Cistus in s. Europe. Its extract (*Succus hypocistidis*) is used as an astringent in hemorrhages and dysentery. A species of *Ombrophytum* (*Balanophoraceæ*) springs up suddenly after rain in Peru, like a fungus, is insipid, and is cooked and eaten under the name *Mays del Monte*. Different species of *Balanophora* are abundant in n. India: they are found in the Himalaya at an elevation of 10,000 ft., producing great knots on roots of maple trees, oaks, etc., which are sought after by the Tibetans, and carried into Tibet, where they are made into very beautiful cups.

RHIZINE, n. *rī′zīn* [Gr. *rhiza*, a root]: the root of a moss or a lichen; called also Rhizula.

RHIZOCARPOUS, a. *rī′zō-kâr′pŭs* [Gr. *rhiza*, a root; *karpos*, fruit]: in *bot.*, applied to RHI′ZOCAR′PEÆ, n. plu. *-pē-ē*, a group of cryptogams including *Marsil′ĕa*, the pepperworts, etc., which have their organs of fructification between the root-fibres.

RHIZODUS, n. *rī′zō-dŭs* [Gr. *rhiza*, a root; *odous* or *odonta*, a tooth]: in *geol.*, a genus of carboniferous sauroid fishes. RHI′ZODONT, n. *-dŏnt*, a reptile whose teeth are planted in sockets, as the crocodile.

RHIZOGEN, a. *rī′zō-jĕn* [Gr. *rhiza*, a root; *gennăō*, I produce]: in *bot.*, producing roots. RHI′ZOGENS, n. plu. same as RHIZANTHS, which see. RHIZOIDS, n. plu. *rī′zoyds* [Gr. *eidos*, resemblance]: the rootlike outgrowths of many Algæ.

Rhizome or Rootstock of Iris.

RHIZOME, n. *rī′zōm*, RHI′ZOMES, n. plu. *-zōmz*, or RHIZOMA, n. *rī-zō′ma*, RHIZO′MATA, n. plu. *-zō′ma-tă* [Gr. *rhizōma*, the mass of a tree's roots—from *rhiza*, a root]: in *bot.*, a thick stem running along or under ground, and sending forth shoots above and roots below.

RHIZOMORPHOID, a. *rī′zō-mōr′foyd* [Gr. *rhiza*, a root; *morphē*, shape; *eidos*, resemblance]: in *bot.*, root-like in shape.

RHIZOPHAGOUS, a. *rī-zŏf′a-gŭs* [Gr. *rhiza*, a root, *phagein*, to eat]: feeding on roots.

RHIZOPHOROUS, a. *rī-zŏf'ō-rŭs* [Gr. *rhiza*, a root, *phoros*, bearing—from *pherō*, I bear]: in *bot.*, root-bearing. RHIZOPHORA, n. plu. *-ō-ra*, a genus of tropical plants

Mangrove (*Rhizophora Mangle*).

which root in the mud, and send down from their branches stems and new roots, forming thus a dense thicket to the very verge of the water; the mangrove.

RHIZOPODA, *rī-zŏp'ō-da*, or RHI'ZOPODS, n. plu. [Gr. *rhiza*, a root; *pous* or *poda*, a foot]: important class of the lowest of the animal sub-kingdoms, the Protozoa. In all organisms of this class, the body is composed of a simple gelatinous substance, to which the term 'sarcode' is applied; and in all, locomotion is performed by the protrusion of processes which, from their function, are termed 'pseudopodia,' or false feet. As in the case of all the Protozoa, except the Infusoria, there is no mouth or intestinal tube.

As a typical form of rhizopod, the *Amœba* (fig. 1), a minute animal readily obtained, may be taken. On plac-

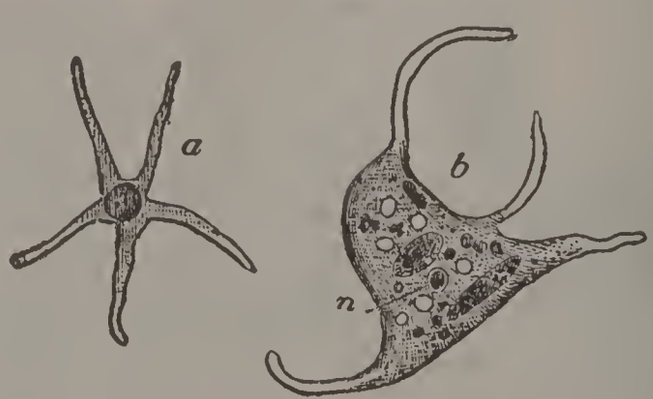


Fig. 1.—Amœba radiosa.
a, young *Amœba*, with five pseudopodia protruded; *b*, another specimen.

ing the light sediment from a watering trough, or any stagnant water, under a microscope, careful search will

bring to view, here and there, a minute roundish mass of semi-transparent jelly, seemingly devoid of life. Soon, however, the animal begins to push out in various directions portions of the gelatinous mass of which it consists,

Fig. 2.—Sun-animalcule in the act of feeding:

Fig. 3.—Difflugia proteiformis.

Fig. 4. Arcella acuminata.

At *a* is seen a captured Infusorian entering the substance of the body.

and by the alternate expansion and retraction of these prolongations, it effects a slow irregular locomotion—the most striking fact being a very thin transparent expansion in some direction, followed by a flow of internal granules. Should these processes come in contact with anything fit for food, they coalesce around it, and the morsel soon becomes inclosed in the interior of the body, much as (to use an illustration employed by Prof. Greene in *Manual of the Protozoa*) a stone may be forced into the interior of a lump of clay, or similar plastic material. When all that is nourishing is absorbed, the indigestible remains are ejected

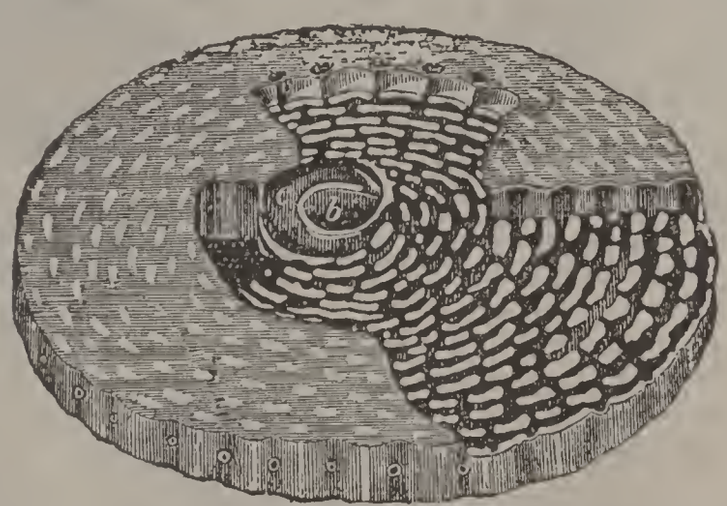


Fig. 5.—Structure of Orbitolites complanatus:

a, simple disk of *Orbitolites* laid open to show its interior; *b*, central cell; *c*, circumambient shell, surrounded by concentric zones of shells connected with each other by annular and radiating passages.

through some part of the body. A nucleus may generally be observed, and at times (but not permanently) one or more clear vesicles may be noticed, containing a fluid furnished apparently during the process of digestion. The animal extemporizes a stomach for the occasion, much as it puts forth temporary legs or arms. The members of the

genus *Amœba* may be regarded as representing the simplest forms of animal life. Closely allied to the *Amœba* is the *Actinophrys*, or Sun-animalcule (fig. 2), and both these genera are completely naked—the sun-animalcule putting forth more permanent, straight, rod-like pseudopodia (said to be provided with suckers at the end) capable of being rapidly elongated or shortened, in the procurement of food. In *Difflugia* (fig. 3), the 'sarcode' is invested with a membranous oval coat with an aperture at one end, from which the pseudopodia project. In *Arcella* (fig. 4), the soft parts are protected by a discoid, or hemispherical shield, open below; while in the *Foraminifera* (q.v.), the soft part is invested with a calcareous shell, sometimes simple, but more commonly an agglomeration of minute chambers (fig. 5).

The class Rhizopoda is divided into Order 1. *Foraminifera*, which, Amœba, etc., excepted, have chambered, calcareous, or horny, rarely arenaceous, shells (examples, Orbitolites, Nummularia, Globigerina, etc., q.v.); and Order 2. *Radiolaria*, formerly called Polycystines, with siliceous shells, and branched, usually anastomosing, granular pseudopodia. All the *Amœba* are microscopic, and seldom exceed $\frac{1}{50}$ of an inch in diameter. The *Foraminifera* (q.v.) are somewhat larger.—See Schultze, *Ueber den Organismus der Polythalamien*, 1854; Williamson, *On the Recent Foraminifera of Great Britain*, 1858; Claparède et Lachmann, *Études sur les Infusoires et les Rhizopodes*, 1858-60; Carpenter, *Introduction to the Study of the Foraminifera*, 1861; and Häckel, *Die Radiolarien*, 1862.

RHIZOTAXIS, n. *rī'zō-tăks'ĭs* [Gr. *rhiza*, a root; *taxis*, a putting in order—from *tassein*, to arrange]: in *bot.*, the arrangement of the roots.

RHODANIC, a. *rō-dăn'ĭk* [Gr. *rhodon*, a rose]: denoting an acid, also called sulphocyanic acid, producing a red color with persalts of iron.

RHODANTHE, n. *rō-dăn'thē* [Gr. *rhodon*, a rose; *anthos*, a flower]: a beautiful flowering annual, much esteemed.

RHODE ISLAND.

RHODE ISLAND, *rōd ī'land* (officially 'THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS'): a state; one of the 13 original states in the American Union. Pop. (1910) 542,610.

Location and Area.—R. I. is in lat. 41° 18′—42° 3′ n., long 71° 8′—71° 53′ w.; bounded n. and e. by Mass., s. by the Atlantic Ocean, w. by Conn.; extreme length n. to s. 47.5 m.; extreme breadth e. to w. 40 m.; land and water area 1,250 sq. m. (800,000 acres); cap. Providence.

Topography.—The surface is much diversified; about one-tenth is water; the greater part of the remainder is islands; a small part of the land surface is level and marshy; the greater part is broken and hilly. The state is divided into two unequal parts by Narragansett Bay, the larger part being in the w. The highest parts of the state are Mounts Hope, Pine, Easchahoague, Hopkins, Chopmist, Neutaconkanet, Woonsocket, and Diamond. The principal islands are Aquidneck (the 'Eden of America'), Cononicut, Prudence, Block (summer resort), Patience, Goat, Dutch, and Perry. R. I. is drained chiefly by the Pawtucket, Pawtuxet, and Pawcatuck rivers, all navigable for short distances and affording excellent water power. Newport has one of the finest harbors in the world, and can give anchorage to a large fleet of the heaviest vessels. The soil is moderately fertile, and the flora, fauna, and vegetation generally are similar to those of Mass. and Conn. The most valuable crop is hay.

Climate.—The climate is nearly like that of the adjoining states, being modified by Narragansett Bay, and the summer season is delightful, particularly at Newport. The rainfall averages 40 in. in the e. and 44 in the w.; mean annual temperature ranges 47°—51°; average mean at Providence for 43 years, 47.94°, and average annual range about (or less than) 100°.

Geology.—The islands and part of the w. section show carboniferous formation, and are believed to form the e. limit of the anthracite region in the United States. The greater part of the w. section and a small part of the e. are of Eozoic origin. The economic properties are coal, iron ore, limestone, sandstone, serpentine, marble, granite, and brickclay.

Zoölogy.—Duck, brant, and teal abound in Narragansett Bay; snipe, woodcock, and grouse in the neighboring swamps and marshes.

Agriculture.—This has not kept pace with the other industries of the state, much of the available farm land having been taken over by manufactories. The crops are for the most part small, hay and forage, followed by corn, being the most notable.

Fisheries.—Oysters, scup, menhaden, and squeteaque are the most important products of the R. I. fisheries,

whose annual output is worth nearly $1,000,000,000. The fisheries of Narragansett Bay were for some time menaced by pollution from the upper part of the bay by the sewerage of Providence, but this evil has latterly been removed, and improved methods adopted.

Manufactories.—Manufacturing is the leading industry of R. I., and it is among the leaders of the country in cotton, woolen, worsted, and knit goods. It is incidentally the parent of cotton spinning in America. Altogether there are about 2,000 manufacturing establishments in the state, with annual products aggregating almost $250,000,000. Besides the combined textiles, the most important industries are foundry and machine-shop products; jewelry; electrical machinery, apparatus, and supplies; and silver smithing and silverware.

Finance and Banking.—The total assessed valuation is about $600,000,000, the tax rate $1.80, and the bonded debt about $4,000,000. There are a great many loan and trust companies in R. I., besides numerous national and state banks.

Commerce and Transportation.—The export commerce from R. I. is insignificant. Foreign imports at the port of Providence amount to over $1,500,000 annually, and there are also custom districts at Newport, Bristol, and Warren. Congress has made liberal appropriations for the improvement of harbor facilities at Block Island, while Providence and other ports accommodate steamers and other vessels used in the coastwise trade and summer travel. The boat-building industry at Bristol is known the world over. Narragansett Pier and Newport and vicinity are fashionable summer resorts, and many of the wealthy families which have made their summer homes there have chosen to call R. I. their legal residence and pay taxes in that state. There are something over 200 miles of railroad tracks in the state, the New York, New Haven and Hartford R. R. controlling the more important lines. Providence, with its large Union Station, is the principal terminus of the state.

Religion.—The strongest denominations in R. I. are the Baptist, Protestant Episcopalians, Methodists, Roman Catholics, Universalists, Presbyterians, etc.

Education.—The state spends nearly $2,500,000 annually in the maintenance of its public schools, in which there are over 75,000 pupils enrolled, with about 2,200 teachers. There are also many private academies. The State Normal School is at Providence, and the state also maintains a College of Agriculture and Mechanical Arts. The R. I. School of Design furnishes educational

Area in Square Miles, 1,250.
Population, 428,556.
Number of Counties, 5.
Capital of State, Providence.
RHODE ISLAND
SCALE OF MILES
0 1 2 3 4 5 10
BORMAY ENGRAVING CO., N.Y.
Longitude West from Greenwich
MASSACHUSETTS
CONNECTICUT
ATLANTIC OCEAN
BLOCK ISLAND SOUND
Douglass Jc.
Woonsocket Jc.
Blackstone
Forestdale
Slatersville
Nasonville
Glendale
Whipple
Woonsocket
Fields Sta.
Bridgeton
Pascoag
Harrisville
Oakland
Tarkiln
Primrose
Manville
Albion
Diamond Hill
Arnold Mills
Abbott Run
Ashton
Berkeley
Lime Rock
Cumberland Mills
Lonsdale
Valley Falls
Central Falls
Saylesville
Pawtucket
Woodlawn
PROVIDENCE
Olneyville
India Pt.
Smithfield
Stillwater Res.
Stillwater
Harmony
Georgiaville
Enfield
Greenville
Greystone
Centerdale
Allendale
Lymansville
Manton
Dyerville
S. Providence
Arlington
Thornton
Cranston
Roger Williams Park
Knightsville
Meshanticut
Auburn
Oaklawn
Howard
Pawtuxet
Lakewood
Norwood
Hills Grove
Shawomet
Barrington
Warren
Silver Spring
Riverside
Drownville
Navatt Pt.
E. Providence
Bowenville
Fall River
Mt. Hope Bay
Bristol
N. Tiverton
Tiverton
Bristol Ferry
Portsmouth
Tiverton Four Corners
Noquit Pond
Adamsville
Little Compton
Bradford
RHODE ISLAND
Middletown
Newport
Jamestown
Sakonnet R.
Sakonnet Pt.
ISLAND ROCKS
BRENTON REEF
Chepachet
W. Gloucester
Smith & Sayles Res.
Killingly Pond
Foster
Pawtuxet
Moswansicut Pond
Chopmist Hill
Foster Center
Rockland
N. Scituate
Ashland
S. Scituate
Bennett Hill
Mt. Misery
Moosup Valley
Fiskeville
Hope
Arkwright
Pontiac
Phenix
River Pt.
Arctic
Centerville
Quidnick
Natick
Apponaug
Greenwood
Warwick
Buttonwoods
Greenwich Bay
North Pt.
PATIENCE I.
HOG I.
Greene
Summit
Coventry
Weeks Hill
Washington
Anthony
Crompton
Cowesett
East Greenwich
W. Greenwich Center
Carr Pond
Nooseneck Hill
Escoheag
Austin
Pine Hill
Wood R.
Arcadia
Liberty
Davisville
Prudence
PRUDENCE I.
HOPE I.
Quonset Pt.
LaFayette
Wickford Jc.
Exeter
Wickford
DYERS I.
GOULD I.
CONANICUT I.
NARRAGANSETT BAY
Belleville
Allenton
Hamilton
Slocum
Saunderstown
Rockville
Hope Valley
Wyoming
Usquepaugh
Canonchet Sta.
Shannock Hill
W. Kingston
Kingston
Woodville
Carolina
Gould
Peace Dale
Hopkinton
Alton
Ashaway
Potter Hill
Kenyon
Shannock
Carolina Sta.
Wood River Jc.
Wordens Pond
Wakefield
Narragansett Pier
Point Judith Pond
White Rock
Niantic
Watchaug Pond
Westerly
Charlestown
Perrysville
Greenhill
Point Judith
Point Judith
Pt. Judith
SQUID LEDGE
Quonochontaug
Avondale
Pawcatuck
Pawawget Pond
Rocky Pt.
Noyes Pt.
Weekapaug
Watch Hill
Napatree Pt.
Sandy Pt.
BLOCK I.
Salt Pond
Block Island
E. Thompson
Thompson
N. Attleboro
Attleboro
East Jc.
Darlington
Phillipsdale
Rumford
71° 30′
41° 30′

advantages of the highest sort in the arts. The leading institution for higher education is Brown University.

State Government.—There are 33 towns and 5 cities within the State. The governor is elected for one year, and a lieutenant-governor, secretary of State and other State officers are elected for the same period. The governor presides over the Senate, has no veto power, and can pardon criminals by and with the advice and consent of the Senate. The members of the legislature, known officially as the General Assembly, are elected for one year. In the upper house, called the Senate, there is one senator from each city and town. In the lower house, or House of Representatives, every town, no matter how small, has at least one member, but as no town or city can have more than one-sixth of the 72 members to which the house is limited, the representation is not proportionate to population. Members of the General Assembly are paid for actual attendance, with a maximum limit of 60 days. The House alone has the power to impeach, and the Senate tries cases of impeachment.

The judicial power is vested in the Supreme Court, and in such inferior courts as the General Assembly may from time to time establish. Preliminary examination of persons charged with serious crimes, and trials for minor offenses are held in the district courts, the justices of which are chosen by the General Assembly. The justices of the Supreme Court are elected by the General Assembly in grand committee, and continue in office until their positions are declared vacant by a resolution of the General Assembly. In practice this has meant election for life, or until retirement by voluntary resignation.

History.—It is believed that portions of R. I. were discovered and explored by the Northmen about A.D. 1000, and that the Vinland, which occurs so often in their records, was this immediate region (see MASSACHUSETTS). Narragansett Bay was visited by Giovanni da Verazzano 1524; but the settlement of the state was effected 1636, June, by Roger Williams (q.v.), who had been ordered to depart from Mass. on account of his persistent public teaching against certain laws of that colony. In 1638 he obtained a grant of territory from the Narragansett Indians, and 1644 was given a parliamentary charter, under which the separate settlements were united under one govt. 1647, styled, 'The Incorporation of Providence Plantations in the Narragansett Bay in New England.' Cromwell confirmed this charter 1655, and Charles II. granted a new one 1663 to the 'colony of Rhode Island and Providence Plantations,' which was continued in force till 1843, when the present constitution was adopted. Both the parliamentary and royal charters guaranteed complete freedom of conscience in religious matters. In 1675–6 the 'Narragansett country' was the

scene of an Indian war in which King Philip was killed and 1,000 of his warriors either killed or captured. During the war between Great Britain and France (1756), R. I. sent out 50 privateers, manned by about 1,500 men. At the beginning of the revolutionary war, the first patriot naval squadron was fitted out at Providence, and sailed under command of Esek Hopkins (q.v.). Newport was occupied by the British 1776, Dec., who successfully defended it against a combined American and French attack 1778, Aug. 8, and abandoned it near the close of 1779, the French allies making it their headquarters 1780, July 11. R. I. was the last colony to ratify the federal constitution, and did not enter the Union till 1790, May 29. The present constitution was an outgrowth of the Dorr rebellion (see DORR, THOMAS WILSON), and has been amended several times since adoption. A prerevolutionary dispute with Mass. concerning the boundary line was settled 1861 by the cession to Mass. of the town of Fall River in exchange for the towns of Pawtucket and E. Providence. During the civil war R. I. sent 23,236 troops to the Union armies. In the civil war Rhode Island supplied more than its quota to the National armies. General Ambrose E. Burnside, for a time in command of the Army of the Potomac, and whose equestrian statue is a conspicuous feature of the city of Providence, joined the service from this State, of which, however, he was not a native, and later was honored by its people by being elected governor and United States Senator. Rhode Island spared no expense in sending troops to the front, and since that great conflict has been generous in caring for her disabled and dependent defenders. The Soldiers' Monument opposite the City Hall in Providence (now about to be re-located), one of the finest in the United States, bears the names of the gallant dead who fell in defense of their country. In the Spanish-American War also, and the conflict in the Philippines, Rhode Island has been well represented.

Governors.—The successive govs., with their terms of service, are as follows: John Coggeshall 1647-8; William Coddington 1648-9; John Smith 1649-50;; Nicholas Easton 1650-1; *Providence and Warwick:* Pres. John Smith, 1622-3; Pres. Gregory Dexter, 1653-4; *Portsmouth and Newport:* Pres. John Sandford 1652-54; *United Towns:* Nicholas Easton 1654; Roger Brenton 1654-57; Benedict Arnold 1657-60; William Brenton 1660-62; *under Royal Charter:* Benedict Arnold 1662-66; William Brenton 1666-69; Benedict Arnold 1669-72; Nicholas Easton 1672-74; William Coddington 1674-76; Walter Clarke 1676-7; Benedict Arnold 1677-8; William Coddington 1678; John Cranston 1678-80; Peleg Sanford 1680-83; William Coddington, Jr., 1683-85; Henry Bull 1685-6; Walter Clarke 1686; Henry Bull 1690; John Easton 1690-95; Caleb Carr 1695;

Walter Clarke 1696-7; Samuel Cranston 1698-1728; Joseph Jencks 1728-32; William Wanton 1732-3; John Wanton 1734-40; Richard Ward 1740-43; William Greene 1743-45; Gideon Wanton 1745-6; William Greene 1746-7; Gideon Wanton 1747-8; William Greene 1748-55; Stephen Hopkins 1755-57; William Greene 1757-8; Stephen Hopkins 1758-62; Samuel Ward 1762-3; Stephen Hopkins 1763-65; Samuel Ward 1765-67; Stephen Hopkins 1767-8; Josias Lyndon, 1768-9; Joseph Wanton 1769-75; *state organization:* Nicholas Cooke 1775-78; William Greene, Jr., 1778-86; John Collins 1786-90; Arthur Fenner 1790-1805; Paul Mumford, actg. 1805; Henry Smith, actg. 1805-6; Isaac Wilbur, actg. 1806-7; James Fenner 1807-11; William Jones 1811-17; Nehemiah R. Knight 1817-21; William C. Gibbs 1821-24; James Fenner 1824-31; Lemuel H. Arnold 1831-33; John B. Francis 1833-38; William Sprague 1838-9; Samuel W. King 1839-43; *under constitution*: James Fenner 1843-45; Charles Jackson 1845-6; Byron Diman 1846-7; Elisha Harris 1847-49; Henry B. Anthony 1849-51; Philip Allen, 1851-2; William B. Lawrence, actg. 1852; Philip Allen 1852-3; Francis M. Dimond, actg. 1853-4; William W. Hoppin 1854-57; Elisha Dyer 1857-59; Thomas G. Turner 1859-60; William Sprague 1860-1; John R. Bartlett, actg. 1861-2; William C. Cozzens, actg. 1863; James Y. Smith 1863-66; Ambrose E. Burnside 1866-69; Seth Padelford 1869-73; Henry Howard 1873-75; Henry Lippitt 1875-77; Charles C. Van Zandt 1877-80; A. H. Littlefield 1880-83; A. O. Bourn 1883-85; George P. Wetmore 1885-87; John W. Davis 1887-8; Royal C. Taft 1888-9; Herbert W. Ladd 1889-90; John W. Davis 1890-1; Herbert W. Ladd 1891-92; D. Russell Brown 1892-95; Charles W. Lippitt 1895-1897; Elisha Dyer 1897-1900; William Gregory 1900-1; Charles D. Kimball, 1901-3; Lucius F. C. Garvin, 1903-5; George H. Utter, 1905-9; James H. Higgins, 1909-10; Aram J. Pothier.

Politics.—The votes of R. I. for pres. and vice-pres. have been as follows: 1792, George Washington and John Adams 4; 1796, John Adams and Oliver Ellsworth; 1800, John Adams, pres., Charles C. Pinckney 3, John Jay 1, vice-pres.; 1804, Thomas Jefferson and George Clinton; 1808, Charles C. Pinckney and Rufus King; 1812, De Witt Clinton and Jared Ingersoll; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, John Q. Adams, pres., John C. Calhoun 3, blank 1; vice-pres.; 1828, John Q. Adams and Richard Rush; 1832, Henry Clay and John Sergeant; 1836, Martin Van Buren and Richard M. Johnson; 1840, William Henry Harrison and John Tyler; 1844, Henry Clay and Theodore Frelinghuysen; 1848, Zachary Taylor and Millard Fillmore; 1852, Franklin Pierce and William R.

King; 1856, John C. Fremont and William L. Dayton; 1860, Abraham Lincoln and Hannibal Hamlin; 1864 Abraham Lincoln and Andrew Johnson; 1868, Ulysses S. Grant and Schuyler Colfax; 1872, Ulysses S. Grant and Henry Wilson; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, James A. Garfield and Chester A. Arthur; 1884, James G. Blaine and John A. Logan; 1888, Benjamin Harrison and Levi P. Morton; 1892, Benjamin Harrison and Whitelaw Reid; 1896, William McKinley and G. A. Hobart; 1900, Wm McKinley and Theo. Roosevelt; 1904, Theodore Roosevelt and Charles W. Fairbanks; 1908, W. H. Taft and J. S. Sherman.

RHODES, *rōdz:* ancient and famous maritime city, cap. of the island of R., and on its n.e. extremity. The harbors, of which there are two, are well fortified and separated by a narrow quay. At their entrances are two large towers of quadrangular shape. The harbors, however, have long been neglected, and this once flourishing mart of the East is now comparatively desolate, without industry or active commerce. The town, overlooked by mosques and minarets, consists of ill-built houses and gloomy streets. The earthquakes of 1851, 56, and 63, as well as the frightful powder-explosion of 1856, caused by a flash of lightning, did much to devastate the town. By the powder-explosion the church of St. John, built 1500, and the great tower of the Knights of St. John, were shattered, together with 300 houses, under whose ruins 1,000 townspeople lost their lives; and the earthquake of 1863 destroyed 2,000 houses and many lives. The palace of the grand master is now in ruins, and the hospital of the knights serves as a granary. Pop. about 20,000.

The city of R. was founded B.C. 408, when the three more ancient towns were abandoned and the whole population joined to found R. as their capital. It was built on a regular plan, the unity and harmony of its architecture being secured by committing the design of the whole to one man, Hippodamus of Miletus, who had planned the Piræus at Athens. It was girt about by strong walls, surmounted by towers, and was provided with two excellent harbors. But it was remarkable for the number and excellence of its paintings, sculptures, and statues, as well as for the beauty and strength of its architecture. The new city soon became one of the most splendid in the world. At the entrance of one of its ports stood a gigantic brazen statue of Helios, 70 cubits high, called the Colossus of Rhodes, one of the seven wonders of the ancient world. 3,000 other statues, of which 100 were colossal, adorned the city. The capital of a fertile and flourishing island, and the great centre of the commerce of the Mediterranean, R. long prospered abundantly. The arts were

prosecuted with assiduity, and intellectual activity manifested itself here long after it had declined in most parts of Greece. From the outbreak of the Peloponnesian war to the middle of B.C. 4th c. R. was alternately in league with Athens and in arms against that city. Like the rest of Greece, it submitted to the victorious Alexander, and received a Macedonian garrison; but on the death of Alexander, B.C. 323, the Rhodians expelled the intruders. From this time to the overthrow of the Macedonian monarchy, R. largely extended its territories, and rose to great commercial and naval importance. After the death of Cæsar, whose side the Rhodians had taken against Pompey in the civil war, they were defeated in a naval engagement by Cassius, who B.C. 42 entered the city by force, massacred the hostile leaders, seized the public property, and rifled the temples. This visitation broke the power of R., but it long maintained its *prestige* as a seat of learning. During several centuries, R. remained in the power of the Greek emperors. In 1310 the grand master of the Knights of St. John of Jerusalem settled here, and here the brethren remained till the 16th c. (see SAINT JOHN OF JERUSALEM, KNIGHTS OF). Since this period, R. has remained a possession of Turkey.

RHODES, ISLAND OF: island in the Ægean Sea, now belonging to Asiatic Turkey; long an important, wealthy, and independent state of ancient Greece; off the s.w. coast of Anatolia, Asia Minor, about 12 m. from its nearest point; between 35° 52′ and 36° 28′ n. lat., and 27° 40′ and 28° 15′ e. long.; 45 m. in length, 22 m. in greatest breadth; about 424 sq. m. It is traversed in the direction of its length —n.e. to s.w.—by a chain of mountains, which reach in Mt. Artemira (anc. *Atabyros*) a height of 4,070 ft., and in Mt. Artamiti nearly 6,000 ft. The mountains are covered with forests, the valleys are fertile, and the well-watered plains form rich and beautiful pasture-lands. Of all the islands in the Levant, R. possesses the most delightful and the most temperate climate. It produces oil, oranges, citrons, etc., and might raise in profusion most necessaries and luxuries. But owing to the insecurity and extortion from which the Rhodians have long suffered, agriculture is depressed; much fertile land lies waste, and the island does not even raise corn enough for its scanty population. A little marble is quarried. The harbors are neglected, and the trade is inconsiderable.

R., anc. *Rhodos*, was inhabited at a very early period The Telchines, asserted by tradition its most ancient inhabitants, are said to have migrated hither from Crete. It was not, however, until the immigration of a branch of the Doric race that the distinctive national character of the Rhodians became fixed. The first immigration of Dorians seems to have taken place before the Trojan war, for R. is said to have sent nine ships to Troy under the leadership of the Heracleid Tlepolemus. Situated between the three ancient continents, a position highly favorable to the development of commercial enterprise, the Rhodians at an early period rose to great prosperity and affluence. Their

three most ancient towns were Lindus, Ialysus, and Camirus, and they planted numerous colonies not only on the shores of their vicinity, but also on the coasts of Lycia, Italy, Sicily, and Spain. At the end of B.C. 5th century they founded the city of Rhodes (q.v.); and after this event, the history of the island is comprised in that of the city.—Pop. about 30,000.

RHODES, CECIL JOHN, D.C.L.: South African capitalist and statesman; b. July 5, 1853; d. March 26, 1902; was the fourth son of the Rev. Francis W. Rhodes, vicar of Bishop Stortford, Hertfordshire; was born in his father's vicarage. He was threatened with consumption in 1871, as the result of a cold caught at a boat-race, and was sent to South Africa in order to save his life. He began cotton-planting with an elder brother in Natal. In 1872 he matriculated from Oriel College, Oxford, but the state of his health compelled him for several years to spend part of each year in South Africa, so that he did not graduate till 1881. In 1876 he entered himself as a student of law at the Inner Temple. He was not long in South Africa until he found his way to the Kimberley diamond fields, where he soon amassed a fortune, and where he effected his first important financial achievement, the amalgamation of the diamond mines under the De Beers company. In 1881 he was elected representative of Barkly West in the parliament of Cape Colony, and later in the same year he met General Gordon—'Chinese Gordon'—in Basutoland. Gordon was strongly attracted by him, and afterwards asked him to join him at Khartoum, but he preferred to accept the post of treasurer-general which was offered him by the Cape Colony premier, Mr. T. Scanlen. He was instrumental in securing the proclamation of the British protectorate over Bechuanaland, of which he was deputy-commissioner in 1884-85. Not long after the discovery of the Witwatersrand goldfields he formed the company known as The Goldfields of South Africa, and subsequently he formed the more important British South Africa Company for the development of Rhodesia. The latter company secured a royal charter in 1889, and the great territory of Rhodesia was effectually attached to the British empire. In 1890 he became premier of Cape Colony, with the support of the Afrikander party, but he had to resign in 1896, owing to his part in the so-called Jameson raid at the end of 1895, when an abortive attempt was made by an armed party entering the Transvaal to coerce or overthrow the government of the country. He was summoned as a witness before the South Africa Committee appointed by the British House of Commons to inquire into the circumstances of the raid, and in the committee's report he was severely censured for deceiving or ignoring those whom he was in duty bound to consult or obey, and for misusing his high position as premier. Despite this report Mr. Chamber-

lain, the Colonial Secretary, who, as a member of the South Africa Committee, had signed it, declared in the House of Commons that there existed nothing against his personal character as a man of honor. In 1898 he was elected for two constituencies in the Cape parliament, and chose to sit for Barkly West. He took part in the defence of Kimberley against the Boer besiegers in 1899-1900, but his influence never recovered from the effects of the raid, and in the new state of matters that had arisen his death caused but little excitement and had no apparent effect on South African politics. He was appointed a member of the Privy Council in 1895, and in 1899 Oxford University conferred upon him the honorary degree of D.C.L. He left a very large fortune, and his will was a most remarkable and characteristic document. He bequeathed £100,000 to Oriel College, Oxford, for certain specified purposes, and made large bequests for the benefit of Rhodesia. His Cape Town residence of Groote Schuur and its property he made over to Cape Colony to form the official residence of the future premiers of a federated South Africa, and he made provision for scholarships to be held at Oxford by students from the colonies, the United States, and Germany.

RHODES, James Ford, LL.D.: American historian: b. Cleveland, Ohio, 1848, May 1. He studied at the University of the City of New York and also at Chicago University, his courses being principally confined to history, literature, rhetoric and metaphysics. In 1867 he went to Paris and attended lectures at the Collège de France, following which he pursued a course in metallurgy at the School of Mines in Berlin, and made a tour of inspection through the iron and steel works of Germany and Great Britain. In 1870 he entered his father's iron business in Cleveland and became a member of the firm in 1874. Having acquired sufficient wealth to enable him to adopt a literary career, he retired from business in 1885, and began the preparation of his *History of the United States from the Compromise of 1850.* In 1891 he took up his residence at Cambridge, Mass., and the next year the first two volumes of his work were published. Seven volumes have so far been published, carrying the work to the close of 1877. The author's design is to continue the history through the year 1885. The Loubat prize was awarded him by the Berlin Academy of Sciences in 1901.

RHODESIA: a British possession in Africa, bounded on the n. and n.w. by the Congo Free State, on the w. by Portuguese territory and Bechuanaland, on the s. by Bechuanaland and the Transvaal, on the e. by Portuguese territory and the British Central Africa Protectorate, and on the n.e. by German East Africa. The river Zambesi, which traverses it from w. to e., divides it into the two portions called Southern and Northern Rhodesia. The whole country is a plateau varying in elevation from 3,500 to 5,000 ft. above sea-level; and in Southern

Rhodesia there are numerous mountain ranges, of which the chief is that of the Matoppo Hills already mentioned. The soil in many parts is fertile, and the ordinary cereals, vegetables, and fruit-trees of Europe can be grown, in addition to the native crops of rice, tobacco, india-rubber, and cotton. Extensive tracts of land are said to furnish excellent pasture. Gold has been worked in Southern Rhodesia from very early times, and there are striking remains at Zimbabye (near Victoria) and elsewhere of the works erected by the early miners. At the present time little, if any, alluvial gold is found, but quartz-reefs are being worked with more or less success in various parts of the country, especially around Gwanda, Buluwayo, Gwelo, Sebakwe, Victoria, Umtali, Mazoe, Salisbury, Hartley Hill, Lo Magonda, Abercorn, and Selukwe. The total output of gold for the year 1903 was about 232,000 oz., valued at £870,000. Coal, iron, copper, silver, tin, plumbago, and kieselguhr have also been reported, and some of them are being worked. The climate in the higher parts of the country is said to be generally suitable for Europeans, but in the lower swampy parts and some of the river valleys malaria is prevalent, and the tsetse fly commits great ravages amongst cattle and horses. The area above 3,000 ft. in Southern Rhodesia, most of which is adapted for the residence of Europeans, is stated at 100,000 sq.m., and above 4,000 ft., where European children can be reared, there are 26,000 sq.m. The summer season, from December to April, is characterized by great heat during the day and heavy rains, but during the rest of the year the weather is generally dry and much colder, especially in June and July. At Salisbury the mean July temperature is 57.5° F., the mean January temperature 70.5° F., and the extremes for the year are about 34° and 93°. The annual rainfall is about 33.8 in., and falls on some 75 days. Southern Rhodesia is being rapidly opened up by means of railways, telegraphs, and roads. Buluwayo is in direct railway communication with Cape Town, and in 1899 the line from Salisbury to the Portuguese coast at Beira was opened for traffic. Salisbury has since been connected with Buluwayo, and the 'Cape to Cairo Railway' has been carried a long distance across the Zambesi. The whole of Rhodesia, together with the treeless plain of Barotseland on the n.w., acquired in 1899, is under the administration of the British South Africa Company, which was incorporated by royal charter in 1889. It is named in honor of Mr. C. J. Rhodes, the founder of the company. Its administration is carried on in accordance with the company's charter as amended by order in council of 1894 and 1898. The chief tribe of original native inhabitants is that of the Mashonas, a peaceful and industrious race. In 1836 a Zulu people, known as Matabele, invaded the country under a chief called Mosilikatse, and easily conquered the indigenous inhabitants. For more than fifty years this

warlike race held undisputed sway in Southern Rhodesia, and appear to have grievously oppressed the subject peoples, but in 1894 the power of the tribes was completely broken and since then they have given no trouble.

Consult: Hensman, *History of Rhodesia* (1900); Knight, *Rhodesia of Today* (1901); Leonard, *How we made Rhodesia* (1896); Thompson, *Rhodesia and its Government* (1898); Tort, *Rhodesia Past and Present* (1897).

RHODIAN, a. *rō'dĭ-an:* pertaining to the island of *Rhodes*, in the Mediterranean: N. a native or inhabitant.

RHO'DIAN LAW: earliest system of marine law known to history; said to be compiled by the Rhodians after they had by their commerce and naval victories obtained the sovereignty of the sea, about B.C. 900. Cicero refers to the Rhodians as illustrious for their naval discipline. The collection of marine institutions termed Rhodian Law is found in Vinnius, but their authenticity is doubted. Some say that the Romans adopted these laws during the first Punic war; others say that Justinian incorporated them with the Roman law. The leading points supposed to be borrowed from the Rhodian law relate to the shares of the officers and crew of a ship, the punishment of barratry and of plundering wrecks, and compensation payable to the heirs of mariners who lost their lives in the service of the vessel.

RHODIUM, n. *rō'dĭ-ŭm* [Gr. *rhodon*, a rose] (symb. R., Rh, and Ro, according to different chemists; at. wt., 104—sp. gr. 10.6-12): one of the metals of the platinum group. It is a white, very hard metal, resembling aluminium rather than silver. It fuses less easily than platinum. It is ductile and malleable when pure and after fusion, and insoluble in all acids; but when alloyed in small quantity with platinum, copper, bismuth, or lead, it dissolves with them in *aqua regia*. It usually forms about one-half per cent of the ore of platinum. To obtain rhodium the solution from which platinum, palladium, and iridium have been separated is mixed with hydrochloric acid, evaporated to dryness, and the residue treated with alcohol of sp. gr. 0.837, which dissolves everything except the double chlorides of rhodium and sodium. After filtering, heating the residue to redness, and boiling with water, metallic rhodium remains. Two oxides, two sulphides, and three chlorides of rhodium have been obtained and examined by chemists. The sesquichloride unites with several soluble chlorides to form crystallizable double salts, which are of rose-color (whence the name rhodium, from the Gr. *rhodon*, a rose). An alloy of steel, with a small quantity of rhodium, is said to possess extremely valuable properties; and according to Deville, an alloy of 30 or more parts of rhodium, with 70 of platinum, is easily worked, and is not attacked by aqua regia, and hence is excellent material for crucibles. This metal was discovered 1803 by Wollaston.

RHODODENDRON, n. *rō'dō-dĕn'dron* [Gr. *rhodon*, a rose; *dendron*, a tree—*lit.*, the rose-tree]: genus of trees and shrubs of nat. order *Ericeæ*, having ten stamens, a very small calyx, a bell-shaped or somewhat funnel-shaped corolla, and a capsule splitting up through the dissepiments. The buds in this and nearly allied genera, as *Azalea* (q.v.), are scaly and conical. The species are numerous; they have evergreen leaves, and many are of great beauty in foliage and flowers. A few small species are natives of continental Europe and of Siberia; but the greater number belong to temperate parts of N. America, and to the mountains of India. *R. maximum*, so designated when the far larger Indian species were unknown, is a common ornamental shrub. It is a large shrub or small tree, which forms impenetrable thickets on many parts of the Alleghanies and in mountainous parts of New England, and has a magnificent appearance when in flower. The leaves are large, oblong, acute, stalked, leathery, dark green and shining above, rusty brown beneath. The flowers are large, in umbellate corymbs, varying in color from pale carmine to lilac. *R. ponticum* is a very similar species, with narrower and more pointed leaves, which are of the same color on both sides, native of w. Asia, apparently also of s. Spain. *R. Catawbiense*, 3–6 ft. high, with smooth oval leaves, rounded at both ends, native of the southern Alleghanies, with large purple flowers; *R. Caucasicum*, whose name indicates its origin; and *R. arboreum*, native of Nepaul, with very dense heads of large scarlet flowers, and leaves 4–6 in. long, attaining in its native country a height of 30 or 40 ft., also are fine species, and well known: most of the extremely numerous varieties common in gardens and shrubberies have been produced from them by hybridizing or otherwise.—Many splendid species of R. have recently been discovered in the Himalaya, the Khasia Hills, and other mountainous parts of India, by Dr. Hooker and others; and some of them have been introduced into Europe. *R. Falconeri* is described as in foliage the most superb of all, the leaves being 18 or 19 inches long. It is a tree 30–50 ft. high, with leaves at only the extremities of the branches. It grows in e. Nepaul at an altitude of 10,000 ft. *R. argenteum* has flowers 4½ in. long, and equally broad, clustered, and very beautiful. *R. Maddeni*, *R. Aucklandii*, *R. Edgeworthii*, and others, have white flowers. *R. Dalhousiæ* is remarkable as an epiphyte, growing on magnolias, laurels, and oaks. It is a slender shrub, bearing from three to six white lemon-scented bells, 4½ inches long, at the end of each branch. *R. Nuttalii* has fragrant white flowers, said to be larger than those of any other R. All these belong

Rhododendron Chrysanthum.

THE RHODODENDRON.

to the Himalaya. In more s. latitudes, as on the Neilgherry Hills and on the mountains of Ceylon, *R. nobile* is found, a timber-tree 50-70 ft. high, every branch covered with a blaze of crimson flowers.—*R. Keysii* and *R. Thibandiense*, also natives of n. India, have flowers with nearly tubular corolla.—*R. ferrugineum* and *R. hirsutum* are small species, shrubs from one to three ft. in height, natives of the Alps, and among the finest ornaments of alpine scenery: they are called *Alpenrose* (Alpine Rose) by the Germans. They have small carmine-colored flowers in umbellate clusters, with which the mountain slopes glow in July and August; but they are not cultivated easily in gardens. The flora of the Himalaya contains a number of similar small species. *R. anthopogon* and *R. setosum*, dwarf shrubs with strongly-scented leaves, clothe the mountains in e. Nepaul at an elevation of 12,000 ft. and upward, with a green mantle, brilliant with flowers in summer. *R. nivale* is the most alpine of woody plants, spreading its small woody branches close to the ground, at an elevation of 17,000 ft. in Sikkim. *R. Lapponicum*, procumbent broadly tufted shrub, 6 in. high, with violet purple flowers, is found on high mountains Me. to N. Y., and grows as far n. as human settlements have reached in Europe, Asia, and America.—Some species of this genus possess narcotic properties. An oil obtained from the buds of *R. ferrugineum* and *R. hirsutum* is used by the inhabitants of the Alps, under the name *Olio di Marmotta*, as a remedy for pains in the joints, gout, and stone.

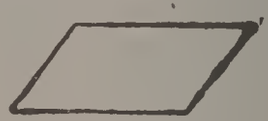
RHODOLITE: a beautiful light red variety of garnet, found only in North Carolina, highly prized as a gem, for which it has been extensively worked and sold within a few years past. The name is from the Greek *rhodon*, a rose, the color resembling some roses and rhododendrons, and unlike most garnets, becoming extremely brilliant by artificial light. Analysis shows that rhodolite is composed of two molecules of pyrope garnet with one of almandite garnet. It occurs intimately associated with the Cowee rubies of Macon county, the crystals of the latter sometimes even enclosing the rhodolite.

RHODONITE: a rose-pink or brownish-red triclinic mineral, essentially a manganese metasilicate, $MnSiO_3$. It usually contains some calcium and iron, while zinc is present in the variety fowlerite, which occurs at Franklin Furnace and Ogdensburg, N. J., in groups of magnificent crystals several inches in length. Sweden yields attractive specimens, and masses of much beauty associated with braunite are found at Cummington, Mass. Its most important occurrence is near Ekaterinburg, in the Ural mountains, from which locality the Russians have for many years mined considerable quantities as an ornamental and semi-precious stone, for which purposes it is highly esteemed, being cut into pillars, mantels, table tops, jewel caskets, etc. Its hardness varies from 5.5 to 6.5.

RHODOSPERMEÆ, n. *rō-dō-spĕr'mē-ē* [prefix *rhodo-*; Gr. *sperma*, seed]: one of the three divisions into which *Algæ* have been divided, the two others being *Melanospermeæ* and *Chlorospermeæ*. With one or two exceptions, the species are marine.

RHOMB, n. *rŏm*, usually written RHOM'BUS, n. *-bŭs* [L. *rhombus;* Gr. *rhombos*, a spinning-top, a magical wheel]: quadrilateral figure whose sides are equal and the opposite sides parallel, but which has two of its angles acute and the other two obtuse (see PARALLELOGRAM). RHOM'BIC, a. *-bĭk*, shaped like a rhombus. RHOMB-SPAR,

Rhomb.



Rhomboid.

a variety of dolomite or crystallized magnesian limestone. RHOM'BOID, n. *-boyd* [Gr. *eidos*, appearance]: a four-sided figure having only its opposite sides equal, and its angles not right angles. RHOM'BOID, or RHOMBOID'AL, a. *-ăl*, rhombus-like; lozenge-shaped. RHOMBOID-OVATE, between rhomboid and egg-shaped.

RHOMBOHEDRON, n. *rŏm'bō-hē'drŏn* [Gr. *rhombos*, a magical wheel; *hĕdra*, a base]: a solid figure bounded by six planes in the form of rhombs. RHOM'BOHE'DRAL, a. *-dral*, pertaining to a rhombohedron; presenting forms derived from a rhombohedron.

RHONCHUS, n. *rŏng'kŭs* [L. *rhonchus;* Gr. *rhongchos*, a snoring—from *rhengkō*, I snore]: in *med.*, an unnatural rattling or wheezing sound produced in the air-passages by obstructions.

RHONE, *rōn:* small but important inland dept. of France, bounded n.w., and s. by the depts. Saône-et-Loire and Loire; 1,077 sq. m.; lying almost wholly in the basin of the Rhone and its great affluent the Saône, which rivers form its e. boundary. The surface is almost entirely mountainous or hilly. Of the 689,536 acres, more than one-half is under tillage. The principal productions are vines and mulberry-trees. The wines are famous for excellence. Of the Mâcon wines, grown in the n., in the former dist. of Beaujolais, the best are the fine red wines of Chenas; of those grown in the s., called *vins du Rhone*, the finest are the red wines of Côte Rôtie and the white wines of Condrieu. About 75,000 acres are in vineyards, and the amount of wine made annually is about 17,000,000 gallons. Silks (see LYONS) are manufactured extensively. For industries of the dept., which is divided into the two arrondissements of Lyon and Villefranche, see those titles. Cap. Lyon. Pop. of dept. (1881) 741,470; (1891) 806,737; (1901) 843,179.

RHONE (*Rhodanus* of the Romans): river rising in the Swiss Alps, on the w. side of Mt. St. Gothard, not far from the sources of the Rhine; the only important French river flowing into the Mediterranean. Its entire length, to the Gulf of Lyon at its embouchures, is 644 m.; area of its basin 28,000 sq. m. The R. is probably the most rapid river of its length in the world. It flows first s.w. through the canton of Valais, and swollen in its rapid course by several tributaries, it takes a sudden turn to the n. near Martigny, and throws its waters into the Lake of Geneva (q.v.). After issuing from the lake, it takes up the turbid stream of the Arve, and forcing its passage through a rocky gorge of the Jura chain, disappears below the rocks near Fort l'Ecluse for a length of 300 ft., forming the subterranean channel known as *La Perte du Rhone.* At St. Génis, the R. enters a less mountainous region, and passing beyond the Jura district, flows through a low valley to Lyon, where it receives the Saône. From Lyon it follows a s. direction past Vienne, Valence, Montélimart, Avignon, and Arles, bifurcating near Beaucaire and Tarascon into two main stream, Greater and Lesser Rhone, which inclose the delta known as Ile de la Camargue, and finally merge their waters with the Mediterranean. The most important affluents of the R. are, on the right, the Ain, Saône Doubs, Ardèche, and Gard; on the left, the Arve, Isère, Drôme, and Durance. From Lyon, the R. is easily navigable southward for good-sized vessels; but the up-navigation, owing to the rapid fall of the stream, and the sudden shifting of sandbanks, is difficult, and at times almost impracticable. On account of these and other obstructions, greatest near the mouths of the river, the communication with the Mediterranean is chiefly by canals, which, communicating with several shore-lakes, as l'Etang de Berre and others, open a passage between the sea at Port du Bouc and the river at Arles, and thus obviate the necessity of navigating round the delta. In its upper and middle course, the R. presents beautiful and varied scenery, enriched with luxuriant southern vegetation, including grapes of superior quality, from which some of the finest wines of France are obtained; but below Avignon it passes through a broad, arid track and is bounded by swampy banks. The great natural commercial advantages of the R. have been considerably extended by numerous canals, which, joining it to the Seine, the Loire, and the Rhine, connect it with the Atlantic and the German Ocean.

RHONE, Bouches du: see Bouches-du-Rhone.

RHOPALIC, a. *rō-păl'ĭk* [Gr. *rhopalon*, club which gradually becomes larger from the handle to the top]: in *prosody*, applied to a line in which each successive word has a syllable more than the one preceding it.

RHUBARB, n. *rō'bärb* [L. *rha barbărum*, rhubarb; *Rha*, old name of river Volga, in Russia, on whose banks first found, and L. *barbărŭs*, foreign: F. *rhubarbe*], (*Rheum*), genus of plants of nat. order *Polygoneæ*, closely allied to *Rumex* (dock and sorrel), from which it differs in having nine stamens, three shield-like stigmas, and a three-winged achenium. The species, which are numerous, are large herbaceous plants, natives of central Asia, with strong, branching, almost fleshy roots; erect, thick, branching stems, sometimes 6 or 8 ft. high; stems and branches while in the bud covered with large membranous sheaths. The leaves are large, stalked, entire or lobed; the flowers are small, whitish or red, generally very numerous, in large loose panicles of many-flowered clusters. The roots are medicinal; but those of different species seem to possess

Medicinal Rhubarb (*Rheum officinale*).

their medicinal properties in very different degrees, or these properties are developed very variously in different soils and climates, or according to other circumstances not at all understood. It is not known what species of R. yields the valued R. of commerce, which comes from inland China or Chinese Tartary. Some of it reaches Europe by way of Canton, but the best is brought through Russia. It is commonly known, however, as *Turkey R.*, because it was formerly shipped from the ports of the Levant. R. is said to have been cultivated in England first in 1778, but it was not much used for the table till 1800, and did not become popular as a market crop till about 1840. It is now largely grown in temperate regions for the stalks, which contain an agreeable mixture of citric and malic acid and are used for sauce, tarts, and pies: in some localities R. is known as the Pie-plant. The juice is sometimes used for manufacture of wine. The stalks of the cultivated varieties grow one to

three ft. in length, and in their widest portion have a diameter of one to three inches. R. thrives in a variety of soils, but best in one that is deep and rich. It is propagated by seeds, and by pieces of roots. The latter is the more common method when but few plants are wanted, and it gives a crop a year earlier than can be obtained from seed. In three years from seed R. will give a moderate yield, and if well manured, and not cut too closely, the plants will remain productive 15 years. Unless wanted specially for seed, all the seed stalks should be removed as soon as they appear. Plants should be set four ft. apart each way, in a rich and deeply-plowed soil, and should be kept free from weeds by frequent cultivation. R. is easily forced in cold-frames and greenhouses, and the early supply in large cities is obtained usually in this manner. Farmers and small gardeners often hasten growth and produce tender stalks by placing barrels, from which the heads have been removed, over the plants early in spring. About half a dozen varieties of R. are cultivated in the United States.

R. root (*Rheum, Rhei Radix*) may be briefly described as a cathartic, an astringent, and a tonic. As a cathartic, it operates chiefly by increasing the muscular action of the intestines; and when the cathartic action is over, there is generally more or less constipation, arising, as is usually supposed, from the astringent action then coming into play. In small doses it has a tonic effect. The appetite is improved, and the digestive process rendered more active, by the action of this drug. It must not be forgotten that the coloring-matter of R. passes into the serum of the blood and the secretions; and urine rendered red by its absorption has not unfrequently been confounded with bloody urine by practitioners ignorant of the very different chemical reactions of rhein and the coloring-matter of blood. Powdered R. is sometimes used as a dressing for sores. It is often adulterated with materials which greatly decrease its value. The different varieties also vary considerably in their strength and the methods of their action. Several special preparations are in use for medicinal purposes. The R. most in use in the United States is from the species Chinese or India R., Russian or Turkey or Bucharian R., and European R. The Pie R. (Pie-plant) consists of hybrids between *R. rhaponticum, R. undulatum,* and *R. palmatum.*

R. root is one of the best aperients for general use in infancy, because of the certainty of its action, and of its tonic and astringent properties, which are important in treatment of many infantile diseases attended with imperfect digestion and irritation of the intestinal canal. In adults, it is serviceable in chronic diarrhea and dysentery, when it is expedient to clean out the bowels. It is a useful aperient also in convalescence from exhausting disease, as being free from the risk of overacting; and for the same reason, it is a useful medicine for persons constitutionally liable to over-purgation from trivial causes.

RHUMB, n. *rŭm,* or RHUMB-LINE [a form of RHOMB: It. *rombo;* F. *rumb,* a point of the compass—in old charts marked by large lozenges or rhombs, whence the name *rhumb* is said to be given to a point of the compass]: a lozenge-shaped figure. The term was introduced, according to Vitalis, into navigation by the Portuguese, denoting at first a meridian, especially the principal meridian of a map. It then came to signify any vertical circle, whether meridian or not, thence any point of the compass. A ship is therefore said to sail on a rhumb when its head is kept constantly directed to the same point of the compass. The rhumb-line thus crosses all meridians at the same angle, and corresponds exactly to the straight line in Loxodromic *Lines* (see LOXODROMIC). In Mercator's chart, the rhumb-line is a straight line (though not so in nature); but it must be carefully noticed that equal portions of it on the chart do not indicate equal distances on the surface of the globe, the divisions which are lowest in latitude always representing the greatest distance, and *vice versa.*

RHUS: a genus of the cashew-nut family (*Anacardiaceæ*). It is found all around the world, and the species are generally shrubs, with simple or compound leaves, and small five-merous flowers in panicles. The fruit is a dry, one-seeded drupe, often in conspicuous masses. Some, like the American staghorn sumac (*Rhus typhina*), with its tropical appearance, and the smoke-tree (*R. cotinus*) are planted for ornament; and the *R. coriaria* is cultivated along the Mediterranean for its leaves, a valuable material for tanning leather, when a fine white color is desired, as in light morocco. The foliage of some other species is also gathered for the same purpose. The American aborigines used *Rhus* berries for red, and the juice for black dyes, and the bark of *R. glabra* is employed as a mordant for red colors. Oriental lacquer is made from juice exuding from incisions in the bark of *R. vernicifera.* Many species, including the *R. toxicodendrom,* which, like *R. vernix,* is poisonous to the touch (see PLANTS, POISONOUS), are used in medicine, and the acid fruits of certain species are made into cooling drinks or sharpened vinegar. Chinese galls are produced by *R. semialata,* and candlewax is expressed from the berries of the wax-tree (*R. succedanea*), and from *R. vernicifera,* often planted in Japan for that purpose. One or two species furnish a useful wood.

RHUSMA, n. *rŭs'ma:* in *leather-manuf.,* a mixture of caustic lime and orpiment or tersulphide of arsenic, used in depilation or unhairing of hides. See RUSMA.

RHYME, or RHIME. See RIME.

RHY'MER, THOMAS THE: See THOMAS THE RHYMER.

RHYNCHONELLA, n. *rĭng'kō-nĕl'la* [Gr. *rhungchos,* a beak]: genus of brachiopodous mollusca, characterized by its trigonal acutely-beaked shell, the dorsal valve of which

is elevated in front, and depressed at the sides, and the ventral valve is flattened or hollowed along the center. The genus is represented by two living species, one from the icy seas of the north, the other from New Zealand: the shells of both are black. No less than 250 species of fossil shells have been referred to the genus. They occur in all formations from the Lower Silurian upward. RHYN'CHOLITES, n. plu. *-līts* [Gr. *lithos*, a stone]: in *geol.*, fossil remains of the beaks of certain cephalopods.

RHYNCHOPH'ORA. See WEEVIL.

RHYNCHOPS, *rĭn'kŏps*, commonly called SKIMMER: genus of web-footed birds of the *Laridæ* (q.v.) family, to which the gulls, etc., belong. The bill is broad at the base, but thence to the tip is laterally compressed. The upper mandible is the shorter. There are three or four species, the best known being the black Skimmer, found on the east coasts of N. and S. America, and said to be on the west coast.

RHYS, *rēs*, ERNEST: English author: b. London, 1859, July 17. He was educated at Bishop's Stortford and Newcastle-on-Tyne and in 1877 became a mining engineer. In 1885, however, he turned his entire attention to literature and in 1887 made a lecturing tour in the United States. He was editor of the Camelot series of reprints and translations (65 vols., 1886-91), of *The Lyric Poets* (12 vols., 1894-9), and other publications and has written: *The Great Cockney Tragedy* (1891); *Welsh Ballads and other Poems* (1898); *Frederick Lord Leighton* (1898); *The Whistling Maid* (1900); *Celtic Lore* (1901); *Ogam-inscribed Stones Preserved in Dublin* (1902); etc.

RHYS, JOHN, M.A., D.LITT.: Welsh Celtic scholar: b. Ponterwyd, Cardiganshire, 1840, June 21. He was educated at Bangor Normal College for the teaching profession; kept a school in Anglesey till 1865, and in 1869 was graduated from Oxford. Continuing his studies at the Sorbonne and Collège de France in Paris, Heidelberg, Leipsic and Göttingen, in 1871 he was appointed inspector of schools for Flint and Denbigh, and in 1877 professor of Celtic in Oxford University, becoming in the same year an honorary fellow of Jesus College, of which he has been principal since 1895. He was already known as a Celtic scholar before the publication, in 1877, of his *Lectures on Welsh Philology* gave him a high reputation in this department of scholarship. Later works are: *Celtic Britain* (1882); *Origin and Growth of Religion as illustrated by Celtic Heathendom* (1887); *Studies in the Arthurian Legend* (1891); *The Early Ethnology of the British Isles* (1891); *Inscriptions and Languages of the Northern Picts* (1892); *Celts and Pre-Celts; The Welsh People* (1900), in collaboration with J. B. Jones; and *Celtic Folk-lore* (1901). He has also edited various Welsh texts with J. G. Evans.

RHYTHM, n. *rĭthm* [Gr. *rhuthmos*, regulated, recurring, hence measured motion, proportion—from *rheein*, to flow: L. *rhythmus:* F. *rhythme*]: in its widest sense, measured or timed movement, regulated succession; specially, agreement of measure and time in prose and poetry; also in music and in motion, as in dancing. It seems to be a necessity for man, if movements of any kind are to be sustained for a length of time, that some more or less strict law of interchange should regulate the succession of the parts. It is believed that the ground of this necessity may be discovered even in the structure and functions of the human body. See Bain, *The Senses and the Intellect.* More particularly, in order that a number of parts may constitute a whole, or, at all events, a pleasing whole, a certain relation or proportion must be felt to pervade them. When exemplified in the arrangement of matter into visible objects, as in sculpture, architecture, and other plastic arts, R. is usually called *symmetry.* R. applied to the movements of the body produces the *dance.* 'The rhythmical arrangement of sounds not articulated produces *music,* while from the like arrangement of articulate sounds, we get the cadences of *prose,* and the measures of *verse.* Verse may be defined as a succession of articulate sounds, regulated by a R. so definite that we can readily foresee the results which follow from its application. R. is also met with in prose; but in the latter its range is so wide that we never can anticipate its flow, while the pleasure we derive from verse is founded on this very anticipation.'

The R. or verse is marked in various ways. In Sanskrit, Greek, and Latin, during their classic periods, *quantity,* or the regulated succession of long and short syllables, was the distinguishing mark of verse. In the languages descended from these three ancient tongues, as well as in all the other Aryan languages, the R. depends on *accent:* see METER. The recurrence of similar sounds, or *rime,* also is used, with accent, to render certain points of the R. more distinct, as well as to embellish it: see RIME.—R. in *music* is the disposition of the notes of a musical composition in respect of time and measure. To R. chiefly music is indebted for its order, perspicuity, intelligibility, and consequently its power and effect. The rhythmical value of a musical sound is the ratio which its duration bears to that of other sounds: see NOTE. A musical composition is made up of portions of equal rhythmic value, called *measures,* separated by vertical lines called bars, the length of the measure being indicated by a sign at the beginning of the movement. For the varieties of time and their signatures, see MUSIC. The first note in each measure is distinguished by a greater force or stress than the rest: that stress is called *accent,* and of the four measure-notes in common time the third has also a subordinate accent, as has the third measure-note in triple time. There is also an irregular or rhetorical accent in music called *emphasis,* which may be laid on any part of the measure, and whose use is regulated by taste and feeling. RHYTHMIC, a. *rĭth'mik,* or RHYTH'MICAL,

a. *-mĭ-kăl*, pertaining to rhythm; having rhythm; harmonical; in *mea.*, denoting the regular healthy discharge of the functions of an organ, e.g., the pulsations of the heart: also, see RHYTHMICAL DISEASES. RHYTH'MICALLY, ad. *-lĭ.*

RHYTH'MICAL DISEASES: certain periodically recurrent morbid affections; of which some become aggravated or mitigated at particular hours; others appear in paroxysms, to a certain extent of regular duration and recurrence; and a third class is named quotidian, tertian, quartan, etc., from the precise and unvarying periods of their returns. The element of time, and of regular intervals of time, is chiefly characteristic of morbid conditions of the nervous system, and of malarial fevers. In chorea, a rhythm may often be detected, and tics, or spasmodic jerking movements of the eyelids, the head, the fingers, etc., frequently present perfectly timed succession. In malaria (q.v.) the periodicity of the paroxysms is due to the regularly recurring invasion of the blood by new generations of the plasmodium or parasite causing the disease.

RHYTHMOMETER, n. *rĭth-mŏm'ĕ-tėr* [Gr. *rhuthmos*, measured motion; *metron*, a measure]: an instrument for marking time to movements in music.

RHYTINA STELLERI, *rĭt'ĭ-nâ stĕl'ėr-ī* (improperly *borealis*): monster that became extinct in the 18th c.; belonging to the singular herbivorous order *Sirenia*, 'sea-cows,' closely related to whales, but in some features of skull, dentition, and habit, like Ungulates. Living representatives of the order, the Manatees (q.v.) of Florida and s. to the Amazon, and (another species) on the w. coast of Africa, and the Dugongs (q.v.) of the Indian Ocean, are 8-10 ft. long, sometimes 20 ft., and have true teeth; but the Rhytina, otherwise called Stellerine, was 25-35 ft. long and 20 ft. circumference, and had only a horny palatine plate, with a corresponding one on the front of the lower jaw, in place of teeth. It was discovered 1741 by Behring (q.v.) on an island named after him; and it was described by Steller, whose name it bears. The herds were rapidly exterminated by sailors, the last having been seen 1768. A few bones are preserved at St. Petersburg.

RIAD, *rē-âd'*, or RIYAD, *rē-yâd':* city, cap. of the Wahabite kingdom. See WAHABIS.

RIAL, n. *rē'al.* See REAL 2.

RIAL, n. *rī'al* [an old spelling of ROYAL]: a royal—a gold coin at one time current in Great Britain, varying in value from ten to thirty shillings.

RIALTO, *rē'âl'tō:* (1) the principal bridge of Venice (q.v.), the only one spanning the Grand Canal. It consists of a single arch 90 feet in span and 24 feet high, and was built of marble at a cost of over $500,000, in 1590. Two ranges of shops divide the bridge road into

three narrow parallel streets. Shakespeare mentions the bridge and contiguous promenades as a rendezvous in *The Merchant of Venice,* and the term has become synonymous with the meeting places of the theatrical profession in most populous centers. (2) The Rialto in New York was first applied to the section on 14th street, between Broadway and Fourth avenue; but has now extended to the west portion of Broadway, between 23d and 32d streets.

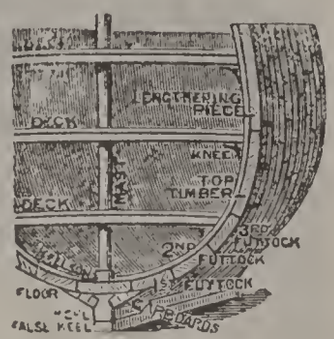
RIANT, a. *rī'ant* or *rē'ŏng* [F. *riant,* smiling—from L. *ridens* or *riden'tem,* laughing; *ridērĕ,* to laugh]: in *OE.,* laughing; exciting laughter.

RIAZAN, *rē-â-zân':* central govt. of Great Russia, extends s.e. from the govt. of Moscow; 16,221 sq.m. The principal river is the Oka, which, after forming the boundary between the govts. of Moscow and Tula, and part of the boundary between Moscow and Riazan, flows s.e. to the middle of Riazan, then turning n. disappears across the border on the n.e. The Oka divides the govt. into two unequal parts, of which the n. is low in surface and sandy in soil, while the s. has an elevated surface and a most fertile soil. The Don crosses the s.w. of Riazan, but is not here navigable. The chief products are iron ores, limestone, wheat, oats, rye, millet, buckwheat, and vegetables. There are many remarkably good studs of horses. Though the chief occupations are agriculture and horticulture, there are important industrial establishments, e.g., needle, cloth, and glass factories; cotton-mills, iron-works, tanneries, and soap and tallow works. Manufactured goods and corn are exported. Pop. 1,827,550.

RIAZAN: town of Great Russia, cap. of the govt. of Riazan; on a branch of the Oka, near its junction with that river, 130 m. s.e. of Moscow. It was founded 1208, became 1487 the residence of the princes of Riazan, and was made chief town of the govt. of Riazan 1778. The chief fragment of antiquity is the interesting old fort called the Kreml. There is a ferry here across the Oka, at which the products of the vicinity are shipped: 5,770,000 bushels of corn are exported annually. The chief manufactures of the city are woolen and linen goods, leather and needles. Nearby is the village of Grishina, in which are large cutlery works. Pop. 44,550.

RIB, n. *rĭb* [Dut. *ribbe,* a rib, a beam: Ger. *rippe,* a RIB: AS. *ribb,* a rib]: one of the curved bony hoops or bars which protect the lungs, heart, etc. (see RIBS). In *arch.,* one of the curved timbers in an arched roof to which the laths are nailed; also, a projecting band or molding on an arched or flat ceiling. It is of universal use in all styles of Gothic architecture; the early Norman examples are simple square bands crossing the vault at right angles, the groins being plain angles. In early English the groins are ribbed and all the ribs are molded. The

ribs and their moldings are multiplied as the style advances, till the whole surface becomes covered with them in the Fan-tracery Vaulting (q.v.). Plaster ceilings are sometimes elaborately ornamented with patterns formed by ribs, especially in the styles of the times of Elizabeth and James I. In *bot.*, the central longitudinal nerve or vein of a leaf; in a *ship*, one of the curved timbers which give form and strength to its side: something long, thin, and narrow: jocular term for a wife: V. to furnish or surround with ribs; to form with rising lines or ridges, as cloth. RIB'BING, imp. RIBBED, pp. *rĭbd'*: ADJ. furnished with ribs; in *bot.*, a term applied to a leaf having strongly marked nerves or veins. RIBGRASS, or RIBWORT, very common species of plantain—the *Plantāgo lancĕōlā'ta*, often found in meadows (see PLANTAGINEÆ). RIBROAST, v. *rĭb'rōst*, to beat soundly; to thrash. RIB'ROASTER, n. a smart or severe blow, especially with a riding whip. TRUE RIBS, the seven ribs which are attached to the sternum or breastbone, as distinguished from the FIVE FALSE RIBS, which are not so attached; the last two false ribs are called FLOATING RIBS, because they are not attached to anything in front: see RIBS.



Rib.

RIBALD, a. *rĭb'ald* [OF. *ribald* or *ribauld;* It. *ribaldo*, any loose character: mid. L. *ribalda*, a loose woman: Dut. *rabaud*, a worthless fellow: Gael. *raip*, debauchery]: low; base; filthy; obscene: N. a low, vulgar, foul-mouthed creature. RIB'ALDRY, n. *-ald-rĭ*, mean, vulgar, or obscene language; lewdness. RIB'ALDROUS, a. *-rŭs*, containing ribaldry. *Note.*—The American term *rowdy* is exactly synonymous with OF. *ribauld.*

RIBAND, RIBBAND, n. *rĭb'and:* see RIBBON.

RIBAULT, *re-bō'* (or RIBAUT), JEAN: navigator: 1520–65 Sep. 23; b. France. He came to this country in charge of two ships 1562, explored the s. Atlantic coast, cast anchor at Port Royal, and near the present site of Beaufort, S.C., erected a building named Fort Charles. Leaving 26 members of his party, he sailed to France, intending soon to return. The civil war prevented his leaving for some time, and in his absence, the settlement was abandoned. Meanwhile a colony of French Protestants had located on the St. John's river. R., with 7 ships, reached the coast 1565 and took charge of the settlement. Soon afterward a Spanish force, which had been sent to destroy the Protestants, appeared and R. sailed for St. Augustine, but his fleet was wrecked in a storm. The Spanish leader (see MENENDEZ DE AVILES, PEDRO) had seized the French fort and massacred many of the people. He also surprised and killed R. and most of the party with him who were on their way to the settlement.

RIB BAND n. *rib bănd* [compounded of *rib* and *band*]. a long, narrow, and thin piece of timber nailed upon the outside of the ribs of a ship from the stem to the stern-post, or nailed to the timbers of a square body under which shores are fixed.

RIBBON, n. *rĭb'ŭn*, or **RIBAND**, or **RIBBAND**, n. *rĭb'and* [F. *ruban*, a ribbon: Gael. *ribean;* Ir. *ribin*, a ribbon: W. *rhibin*, a streak—from *rhib*, a streak]: a narrow web of silk or other texture—generally used as trimming for some part of a lady's attire (see SILK: SILKWORM): a long narrow strip of anything: in *her*., a diminutive of the ordinary called the Band, of which it is one-eighth in width. **RIB'BONED**, a. *-ŭnd*, adorned with ribbons. **RIB'BONISM**, n. *-ŭn-izm* (see below). **RIB'BONMAN**, a member of the secret society in Ireland holding the principles of Ribbonism. **RIBBON JASPER**, a variety of jasper, exhibiting colors of various shades, and arranged in stripes of parallel layers. **BLUE RIBBON**, a term used to designate the highest order of British knighthood—viz., the order of the Garter—so called from the color of the ribbon by which the badge is suspended; the symbol of the highest degree of excellence. **RED RIBBON**, the order of the Bath—so called from the color of the ribbon which suspends the badge; a symbol or badge of the second degree of excellence. *Note.*—**RIBBON** or **RIBBONISM**, is probably a mere corruption of OE. *ribald* [see **RIBALD**], a word used to designate the humblest class of foot-soldiers in the composition of the armies of former times, and thus applied to the soldiers of the army of James II. as an opprobrious epithet, or to his partizans: OF. *ribauld*, a loose brutal character. Dut. *rabaud*, a rascal: the supposed origin from some distinguishing badge or piece of bunting is not so probable.

RIB'BON-FISH: popular name of a family of acanthopterous fishes, called *Tæniidæ*, or more properly *Tænioidæ*, by naturalists [from *tænia*, a tape-worm], on account of their compressed and elongated form. Notwithstanding their peculiarity of form, they are nearly allied to the *Scomberidæ*, or Mackerel family. They are of very delicate structure, with naked and silvery skin, long dorsal fin often uniting with the tail-fin, small mouth, and protractile snout. They are widely distributed from polar to tropical seas, but are nowhere found in abundance, being deep-sea fishes, and only occasional visitants of the coasts. The delicacy of their frame prevents perfect specimens from being often obtained. Species exist nine or ten ft long, not six inches deep, and scarcely an inch thick. See **BAND-FISH**; **DEALFISH**; **GYMNETRUS**.

RIB'BONISM: system of secret associations among the peasantry in Ireland, the objects of which have long been a subject of suspicion and of controversy. The origin of the associations known under this name is obscure. From the middle of the 18th c., secret organizations, variously designated, but mostly connected with agrarian discontent, have arisen in Ireland. The earliest appears to have been that of the Whiteboys, about 1759. Later, the fierce and sanguinary strife to which the relaxation of some of the

penal laws under which the Rom. Catholics had long suffered gave occasion in the north, and which resulted in the Prot. Orange organization (see ORANGEMAN), led to the Rom. Cath. counter-organization, the Defenders; but this assoc. seems to have been for the time purely local in Armagh, and the neighboring counties in which the violences of the Prot. party had originated. The severely repressive measures adopted by the govt. on the outbreak of the rebellion of 1798, and their continuance for several years, prevented any notable progress of the Rom. Cath. organization; and when at length, about 1806, such an organization was initiated (then called the 'Threshers'), it was with the utmost secrecy. The associations called (it is supposed from the badge worn by the members) by the name of Ribbon societies appeared first about 1808, and originated in Armagh, whence they spread to Down, Antrim, Tyrone, and Fermanagh. Their real object was doubtless combined action, partly for self-defense, partly also probably for directly counteracting the wide-spread and formidable Orange confederacy. Their operations from the first were usually limited to the counties, chiefly in the n. and n.w., in which the Orange associations were formidable; nor do they appear at any time to have had a footing in the purely Rom. Cath. counties, where there were few or no Orangemen to be encountered. The secret associations of the other districts—the midland, s., and s.e. counties—were due mainly to discontents arising from alleged agrarian and social grievances.

The Ribbon Assoc. also addressed itself to the same agrarian and social grievances; but its direct object was antagonism to the Orange confederation, to which it bore considerable resemblance. The Ribbon Association was divided, like the Orange, into lodges, and the members of each lodge were bound by a secret oath to 'be true to each other,' and 'to assist each other in all things lawful;' and they were known to each other by secret signs and passwords. But they seem to have lacked the complete scheme of a 'Central Grand Lodge,' with its subordinate hierarchy of 'county, 'district,' and 'private' lodges, which characterized the great rival confederation. The Ribbon societies consisted exclusively of the very lowest classes, the humbler peasantry, farm-servants, and operatives of the least intelligence. No trace appears among them of what is so striking in the Orange Association—the co-operation, or even the countenance, of the gentry, the clergy, the commercial class, hardly even of the farming class, except a few of the sons of farmers of the lowest grade; and an asserted connection of the Rom. Cath. clergy with them was officially and completely disproved 1839.

The present number of these societies in Ireland is not known: they come to light on every occasion of party-strife; but they appear to have been replaced in several parts of the country by newer associations, such as the 'Phenicians,' the 'Brotherhood of St. Patrick,' and the 'Fenians.' See FENIAN.

RIBEAUVILLE, *rē-bō-vēy"* (Ger. *Rappoltsweiler*): small manufacturing town of Alsace, pleasantly situated amid vineyards, 34 m. s.s.w. of Strasburg. Excellent wines are made, and cotton goods are manufactured. The town is overlooked by the Vosges Mts., along whose crests runs a wall or rampart, built of unhewn stones without cement, eight to ten ft. high. It is of unknown antiquity, and is called the *Heidenmauer*, or Pagan wall. —Pop. 6,100.

RIBERA, *re-vā'-râ*, JUSEPE (in Italian, GIUSEPPE), commonly called LO SPAGNOLETTO ('the Little Spaniard'): 1588, Jan. 12—1656; b. Xativa, near Valencia. He studied a few years with Francesco Ribalta, a Spanish painter of eminence; visited Italy; studied at Rome and other cities; then went to Naples, where, attracted by the novelty and boldness of Caravaggio's style, he adopted it, and ultimately became the ablest painter among the *naturalisti* or artists whose treatment of subjects was based on a vigorous and powerful, but generally coarse and vulgar representation of nature, in opposition to that formed on conventional or academic rules. He settled in Naples, where he lived at first in poverty, till his ability was discovered by a rich picture-dealer whose daughter he married, and who exhibited R.'s *Martyrdom of St. Bartholomew* to admiring crowds. He became court-painter, and executed numerous important commissions in Naples; and there his best works are seen. Salvator Rosa and Guercino were among his pupils. He executed 18 or 20 etchings, all marked by force and freedom.

RI'BES: see CURRANT: GOOSEBERRY.

RIBOT, *rē-bō*, ALEXANDRE FELIX JOSEPH: French statesman: 1842, Feb. 7: b. Saint Omer. He was educated at the Lycée of St. Omer and studied law in Paris where he was admitted to the bar in 1863. He entered public official life in 1870 and in 1878 entered the Chamber of Deputies for Boulogne-sur-Mer. He was minister of foreign affairs in the cabinet of de Freycinet, 1890-3, assisting in forming the alliance between France and Russia, concluded during that period. In January 1893 he was made president of the cabinet and held this office during the investigation of the Panama scandals; also again in 1895 after the election of Faure as president. He was superseded by Bourgeois in October of that year. His most important speeches were on finance, foreign affairs, and freedom of education. In the latter cause he took a position opposing the persecution of the religious orders and published in 1900 a work entitled *Réforme de l'Enseignement secondaire* embodying his observations as chairman of the committee appointed to make inquiry into the state of secondary education. He also published *Biographie de Lord Erskine* (1866): and *Acte du 5 Août 1873 pour l'Etablissement d'une Cour supreme de Justice en Angleterre* (1874).

RIBOT, Augustin Théodule: French painter: b. Breteuil (Eure), 1823, Aug. 8; d. Colombes, 1891, Sept. 11. His only schooling in art was obtained by copying pictures in the Louvre. His early works were household and kitchen scenes: *Cooks; The Dinner Hour; Interior of the Kitchen; The Merry Cook;* and *Poultry.* After 1865 he painted religious subjects; but chose to interpret them by selecting scenes of modern life which he gave with a startling realism: *Jesus in the Temple; Saint Sebastian* and *The Good Samaritan,* now in the Luxembourg gallery, are examples in this vein. In his early days he was forced to practise his art during the night hours, and this no doubt confirmed his predilection for concentrated light and strong shadows. In this he is allied to masters of the Dutch school, while in the frank realism of his methods he is classed with Velasquez and Ribera. In later life he painted historical and genre subjects in addition to his earlier field of subjects.

RIBOT, Théodule Armand: French psychologist: b. Guingamp, 1839, Dec. 18. He was educated at the Lycée de St. Brieure and the Ecole Normal Supérieure, where he was graduated in 1866. He held the chair of philosophy at the lycée of Vesoul and at Laval, 1866-71, when he went to Paris and devoted himself exclusively to researches in experimental psychology in histological and physiological laboratories and in the insane hospitals. In 1876 he founded the *Revue Philosophique,* and in 1885 began his courses at the Sorbonne. Since 1888 he has been professor of experimental and comparative psychology in the College of France. In his first work, *La Psychologie anglaise contemporaine* (1870), he initiated a new school of psychological research in France. The method employed in this work he has consistently followed in succeeding ones. Ignoring all non-material elements in mental life, he seeks his results in the observation and measurement of nervous phenomena in the individual; and the comparison of observed psychological phenomena in races, in infants and in animals. His other works are *Psychologie allemande contemporaine* (1879); *Les Maladies de la Mémoire* (1881); *Les Maladies de la Volonté* (1883); *Les Maladies de la Personnalité* (1885); *La Psychologie de l'Attention* (1889); *L'Hérédité psychologique* (1893); *Psychologie des Sentiments* (1896); *L'Evolution des Idées générales* (1897); *Essai sur l'imagination créatrice* (1900); etc. While the best methods of the English and German psychologists have been to a large extent adopted as a basis by Ribot, still the fact that he has branched out into new lines of investigation and improved on the old methods and the fact that his work has been characteristically French in breadth of view, have placed Ribot in the front rank in the recent development of psychology in France. His psycho-pathological studies are especially valuable.

RIBS.

RIBS, *ribz:* elastic arches of bone, which, with the vertebral column behind, and the sternum or breastbone in front, constitute the osseous part of the walls of the chest. In man, there are 12 ribs on each side. The first 7 are more directly connected through intervening cartilages with the sternum than the remainder, hence they are termed *vertebro-*

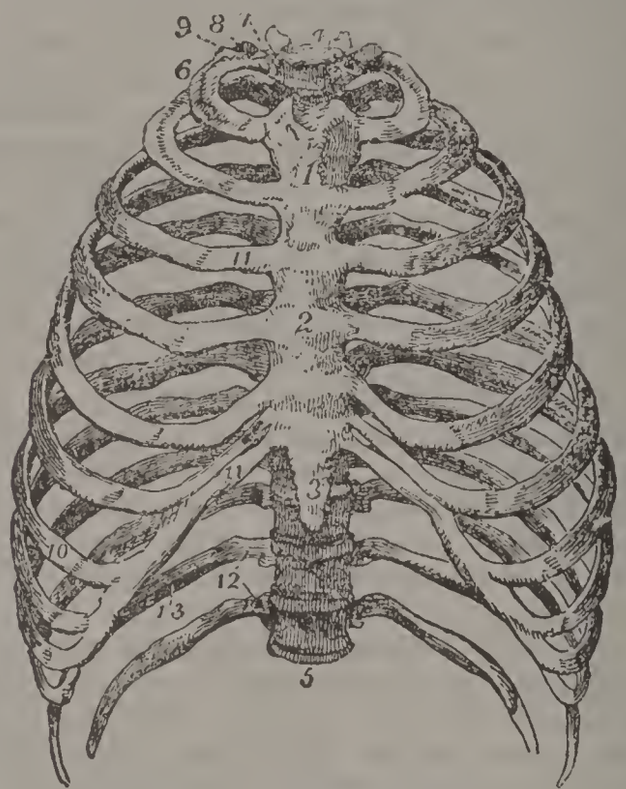


Fig. 1.—The Ribs, *in situ:*

1 and 2 are the upper and middle parts of the sternum or breastbone; 3, its ensiform cartilage; 4, the first dorsal, and 5 the last (or twelfth) dorsal vertebra; 6, the first rib; 7, its head; 8, its neck, resting against the transverse process of the first dorsal vertebra; 9, its tubercle; 10, the seventh or last true rib; 11, the costal cartilages of the true ribs; 12, the last two false ribs or floating ribs; 13, the grooves along the lower border of the ribs (from Wilson's *Anatomist's Vade-Mecum.*)

sternal or *true* ribs; while the other 5 are known as *false ribs,* and the last two of these, from being quite free at their anterior extremities, are termed *floating ribs.* A glance at a skeleton, or at a plate representing the articulated bones, will show that the ribs vary considerably in direction and size. The upper ribs are nearly horizontal, but the others lie with the anterior extremity lower than the posterior; this obliquity increasing to the 9th rib, then slightly decreasing. They increase in length from the first to the eighth, then diminish. The spaces between the ribs are termed *intercostal spaces.* On examining a rib taken from about the middle of the series, we find that it presents two extremities (posterior or vertebral, and anterior or sternal), and an intervening portion termed the body or shaft. The posterior extremity presents a head, a neck, and a tuberosity. The head is marked by two concave articular surfaces divided by a ridge, the lower facette being the larger. These surfaces fit into the cavity formed by junction of two contiguous dorsal vertebræ, and the

ridge serves for attachment of a ligament. The neck is a flattened portion proceeding from the head; it is about an inch long, and terminates at an eminence termed the tuberosity or tubercle, whence the shaft commences. On the lower surface of this tubercle is a small oval surface, which articulates (see fig. 2) with a corresponding surface on the upper part of the transverse process of the lower of the two contiguous vertebræ. The shaft presents an external convex, and an internal concave surface. A little in front of the tubercle, the rib is bent inward, and at the same time upward, the point where this bending takes place being called the angle. The upper border of the rib is thick and rounded, while the lower border is marked by a deep groove, which lodges the intercostal vessels and nerve.

Fig. 2.—A Front View of the Articulations of the Ribs with he Spinal Column:

1, 1, Dorsal vertebræ; 2, 2, intervertebral cartilages; 3, 3, the anterior common ligament, extending like a ribbon along the whole of the front of the vertebral column; 4, the neck, and 5 the head of rib; 6, 7, 8, three flat bundles of ligamentous fibres, radiating from the head of the rib to the adjacent vertebræ and interveterbral substances (they are removed in the lowest rib, seen in the figure); 9, the articulation between the tubercle of the ribs and the transverse vertebral process (from Gray's *Anatomy*).

The ribs of Mammals are mostly connected, as in man with the bodies of two vertebræ, and with the transverse processes of the posterior one. In the Monotremata, however, they articulate with the vertebral bodies only; while in the Cetacea, the posterior ribs hang down from the trans verse processes alone. Their number, on each side, corresponds with that of the dorsal vertebræ. The greatest number, 23, occurs in the two-toed sloth, while in the Cheiroptera, 11 is the ordinary number. In Birds, each rib articulates by means of a small head with the body of a single vertebra near its anterior border, and with the corresponding transverse process by means of the tubercle. Moreover, each rib possesses a ' diverging appendage,' which projects backward over the next rib, so as to increase the consoli-

dation of the thoracic framework, necessary for flying. The dorsal vertebræ here never exceed 11, and are usually 7 or 8 in number: and the ribs proceeding from them are connected with the sternum, not by cartilage, as in Mammals, but by true osseous sternal ribs, regularly articulated at one end with the sternum, and at the other with the termination of the spinal ribs. In the Chelonian Reptiles, the ribs (as well as the vertebra and the sternum) deviate remarkably from the normal type, the lateral parts of the carapace consisting mainly of anchylosed ribs united by dermal plates. In the Crocodiles, there are only 12 pair of true or dorsal ribs; while in the other Saurians, and in the Ophidians, the ribs are usually very numerous. In the Frogs, there are no true ribs; the reason probably being, that any bony element in their thoracic walls would interfere with the enormous thoracico-abdominal enlargement which these animals periodically undergo at the breeding period.

In the language of the transcendental anatomists, a rib is to be regarded as a *Pleurapophysis*—one of the elements of a typical Vertebra (q.v).

Fracture of the Ribs is a frequent result from blows or falls on the chest. Ribs may, moreover, be broken by mere pressure, as when persons are severely crushed in a crowd; and instances are on record of fracture in aged persons by violent coughing. The treatment consists in application of a broad flannel roller round the chest, so tightly as to prevent, as far as possible, all movement of the ribs, and to render the respiration abdominal rather than thoracic. The bandage must be prevented from falling by addition of shoulder-straps; and to prevent the shoulder-blade from moving, and thus disturbing the broken ribs, some surgeons confine the arms to the side of the body. If one or both of the extremities of the fractured rib should perforate both the pleuræ, and wound the lung, air escapes in the act of inspiration from the lung into the pleural cavity, and thence through the wound in the costal pleura into the cellular or areolar tissue of the trunk, giving rise to *emphysema*, in the form of a soft puffy tumor, that crepitates and disappears on pressure.

RIBWORT: see under Rib.

RICA, n. *rī'ka* [L. *rīca*, a veil thrown over the head]: the ceremonial veil worn by ladies in Greece and Rome on occasions of religious solemnity.

RICARDO, *rē-kâr'do*, DAVID: eminent political economist and statesman: 1772, Apr. 19—1823, Sep. 11; b. London; of Jewish extraction. His father, a respectable member of the stock exchange, brought him up to his own business. There was alienation between them on account of the son marrying out of the Jewish persuasion, and conforming to Christianity. Young R. practiced as a broker in the exchange until 1818, where his ability and integrity opened for him a successful career, so that at the age of 25 he was rich. While thus practically occupied, he was ardently investigating the first principles of political economy, to which his attention had been turned by perusal of Adam Smith's great work, 1799: especially the finance department drew his attention. In 1810 he produced a notable sensation by his pamphlet *The High Price of Bullion, a Proof of the Depreciation of Bank-notes.* The title was a condensation of the principle worked out in the treatise, which gave one of the earliest distinct announcements of the principle of a metallic basis, and the propensity that a paper currency always has to redundance, if it be not in some form or other restrained by the operation of such a basis. This was followed by several pamphlets, each commanding attention and exerting influence. In 1817 appeared his principal work, *On the Principles of Political Economy and Taxation.* He had previously in one of his pamphlets touched on the most important feature of this work—the elucidation of the true theory of rent, as being not incidental and casual, like the profits of stock, but a fund that must, under certain conditions of population, come into existence, whoever may draw it (see RENT). It is usual to call the theory by the name of Ricardo; but he distinctly ascribes it to Malthus; and it is now recognised that the elements of the theory were given in *The Bee* by Dr Anderson (see ANDERSON, JAMES). R.'s work is considered one of the clearest and least tedious of all the earlier books on political economy; and undeniably it supplies a valuable series of statements; but it has been criticised in the clearer light of recent days and by a larger experience, as narrowing the influence of the elements from which the world's riches may be increased, and especially as identifying the interest of the capitalist class with the interest of the whole nation—an ethical mistake common to R.'s time, which invalidates to some extent whole libraries of elaborate economic science.

In 1819 R., having retired from business and become a large landed proprietor, entered parliament, where his influence contributed to establish the policy of free trade. His clear method of announcing a principle, and his great success in business, combined with his singularly estimable character for candor, modesty, and generosity, to give him perhaps more influence in all matters of trade and money than those of any other member in the present century. He was a zealous student of geology, chemistry, and other sciences. He died, greatly regretted, at his place in Gloucestershire.

R.'s mind was acute rather than broad. His view of

social problems seems narrow. He develops the mechanical theory of human society—magnifying the selfish principle as practically the controlling factor in all political economy and in all human life—an utter misconception which his own personal excellencies should have taught him to avoid. His system is devoid of sympathy with the working-classes: men are pawns: he frames his hypothesis in accordance with his view of the 'economic man'—that monstrous figment, set forth as so real by successive writers on economics, but never yet seen alive on the face of the earth. In many special departments R.'s conclusions or suggestions have much value, e.g., in finance and currency; but his broader generalizations are not in harmony with the more ethical and vital principles of the day that has since dawned.

RICASOLI, *rē-kâ'zō-lī*, Bettino, Baron: Italian statesman: 1809, Mar. 9—1880, Oct. 23; b. Florence; descended from a very ancient Lombard family, which established itself in Tuscany in the 13th century. R. studied at Pisa and Florence; and early was stirred with a desire to ameliorate the condition of his country; but being averse to revolution, he quietly subsided into one of the best agriculturists in Italy, wrote works on the cultivation of the vine, of the olive, and of the mulberry, and gained for his wines of Chianti the cross of the Legion of Honor. Joining with other Tuscan gentlemen, after the defeat of Novara, he overthrew the govt. of Guerrazzi, and recalled the grand duke, trusting to the constitutional promises given by the latter. Leopold returned, accompanied by the Austrians; and R., indignant at this treachery, sent back his decoration to the prince, and shut himself in his castle of Brolio. For ten years he worked successfully at the drainage of the Tuscan Maremme (q.v.). In 1859, when Tuscany wished to take part in the war of Italian independence, R. reappeared. The grand duke fled, and R. was made dictator of Tuscany. After Villafranca, he remained alone in the government, beset by the French emissaries, who were advising him to recall Leopold II. R. fiercely refused to do so; he wished the annexation to Piedmont; and his obstinacy saved Italy, and produced the unity of the Peninsula. On the death of Cavour (1861), R. was called to the ministry, and by another abrupt and decided act, he promulgated political and administrative unity. His cabinet, undermined by Rattazzi, did not stand; he therefore resigned 1862, Mar. In 1866 he returned to power, retiring 1867 in ill health.

RICCI, *rēt'chē*, **MATTEO: eminent** Jesuit, founder of modern Christian **missions to China: 1552**, Oct. 6—1610, May 11; b. Macerata, **in the Marches** of Ancona. After studying law at Rome, he entered the Society of Jesus 1571. Six years later, he accompanied to India Père Valignan, 'Inspector-general of the Eastern Missions.' On account of R.'s fine combination of zeal and tact, he was chosen by his superior to introduce the Christian religion into China, and after preparing himself for the undertaking by a study of the Chinese language at the Portuguese settlement of Macao, he sought entrance into the empire. But his first efforts were vain, and it was not till 1583 that the Jesuit Fathers obtained permission to settle at Tchao-king-fu. R. in his efforts for converting the Chinese, sought to accommodate himself to their intellectual tastes and beliefs; and aware how highly the mandarins estimated literary skill, he executed and published a Chinese *Map of the World*, and also a little *Catechism*, in which he set forth only such portions of Christianity as embody the general principles of morality, withholding those portions which directly concern Christ Jesus—a fact which probably explains the bitter attacks on R.'s theology years after his death. These two productions won R. a high reputation among the Chinese *literati;* the most illustrious mandarins came to visit him, and expressed their esteem for his character and talents. In 1595 he boldly resolved to go to Peking, believing that he could accomplish far more as a religious propagandist in the metropolis than elsewhere. Having obtained permission from his superiors to assume the dress of a Chinese scholar, he set out in the train of a mandarin, who did not allow him, however, to proceed further than Nanking. Expelled thence, he was obliged to return homeward; but at Nan-tchang-fu, the indomitable and adroit priest composed two treatises, entitled the *Art of Memory*, and a *Dialogue on Friendship*, in imitation of Cicero, which so pleased the taste of the Chinese, that they ranked them with their most esteemed books, and the fortunate author was allowed to proceed north. He reached Peking, and was permitted to fix his residence at Nan-king, the second city in the empire, where his fame as a scholar increased from day to day. In 1600 he and his companions were allowed to settle at Peking, and even to build a church. He spent the remainder of his life in teaching mathematics and other sciences, in writing works secular and religious, and in using his great influence with the king, the court, and the learned classes generally to obtain a favorable attention to the claims of his religion. R. made several striking conversions, and through his zeal, missionary establishments were set up in the principal cities of China. At his death he was universally mourned. In the annals of the Chinese Empire, he is designated sometimes *Li-ma-teou*, and sometimes *Si-thaï*. The most important (for us) of his numerous writings are his Memoirs, published by Père Trigault, under the title of *De Christiana Expeditione apud Sinas suscepta ab Societate Jesu, ex M. Riccii Commentariis Libri V.* (Augsb. 1615; Lyon 1616).

RICE, n. *rīs* [F. *riz;* It. *riso*, rice: L. *ory'za;* Gr *oruza;* Ar. *aruzz*, rice]: a well-known grain, only produced in warm climates and from a moist soil; the *Ory'za satīva*, ord. *Gramin'ĕæ.* RICE'-BIRD, n. the Bobolink (q.v.). RICE'-FLOUR, ground rice for puddings, etc. RICE'-GLUE, n. cement said to be made in Japan by mixing rice-flour with cold water, and boiling the mixture. It is white, becomes nearly transparent, and is useful for cementing paper in layers. RICE'-GRAINS, n. in *astron.*, certain forms of what may be bright clouds floating in the sun's atmosphere, with a dark background. RICE'-PAPER, a paper prepared from the pith of a certain plant, and brought from China—the *Tetrapanax papyrif'ĕrum*, ord. *Araliācĕæ.* RICE'-TENDRAC, n. in *zool.*, *Oryzorictes hova tetradactyla*, an insectivorous mammal described by Grandidier 1870. It is somewhat smaller than a hedgehog, grayish brown in color, and having the snout prolonged into a short trunk. Its damage to rice-crops is due doubtless to its burrowing in pursuit of worms and insects. RICE'-TROOPIAL, n. the same as RICE-BIRD. RICE'-WEEVIL, n. in *entom.*, *Calandra oryzæ*, an insect which attacks the rice-plant in the southern states: called also *Sitophilus oryzæ.*

RICE (*Oryza*): genus of grasses, having panicles of one-flowered spikelets, with two very small pointed glumes; the florets compressed, the paleæ strongly nerved, awned or awnless, six stamens, one germen, and two feathery stigmas. The only important species is the COMMON R. (*O. sativa*), one of the most useful and extensively cultivated of all grains, supplying the principal food of nearly one-half of the human race. It seems to be, originally, a native of the E Indies, but is now cultivated in all quarters of the globe. It is adapted to tropical and sub-tropical climates, rather to the latter than the former. R. is an annual, from one ft. to six ft. in height. There are many distinguishing characters of the varieties in cultivation: some having long awns, and some being awnless; some having the chaff (*paleæ*), when ripe, yellow, white, red, black, etc. The seed or grain of R. grows on little separate stalks springing from the main stalk; and the whole appearance of the plant, when the grain is ripe, is intermediate between that of barley and of oats. Some varieties of R. require a moist soil, sometimes flooded; and its cultivation has in many places been attended with increase of intermittent fevers, and of general unhealthfulness, the rice-fields being artificially flooded at certain seasons. The cultivation is most extensive in India, China, Cochin-China, and other s.e. parts of Asia, in Japan and Egypt, and in the southern states of this country. Small quantities are grown in s. Europe. Like most cultivated plants, R. is very liable to variation; and 50 or more known varieties are cultivated, of which the Carolina R., largely grown in the United States, is the best.

R. is known in India as *Paddy.* Another use of this name is to designate R. in the husk. In China R. is

generally sown thickly on very wet land, and afterward transplanted to the land which it is finally to occupy. The plants *tiller* or spread at the root very much, so that each sends up several stalks. The rice-grounds are carefully kept clear of weeds, though often so wet that a man cannot walk in them without sinking to the knees. In many parts of China, and in other warm countries, it is common to obtain two crops of R. in a year.

R. contains a smaller amount of *flesh-forming* substances, and a larger amount of *fat-forming* or *heat-giving* substances, than any other grain. As a food, it is peculiarly well adapted for hot climates, as it appears to be almost a cure for dysentery and other bowel complaints

Rice (*Oryza sativa*).

independently of which it is a sufficiently nutritious food without being heating. Owing to the small quantity of gluten which it contains, it is capable by itself of only an imperfect fermentation, and is unfit for being baked into bread. It is, however, subjected to fermentation in many countries. The beer made from R. by the Japanese is called *Saki*, and is in general use among them; but before being drunk, it is heated in kettles. Several kinds of *Rice-wine* are made by the Chinese, some of them very intoxicating. A spirit is distilled from the lees, called *Shou-choo* or *Sam-choo*. The common Arrack (q.v.) of the East is made from rice, and rice is used largely also by distillers in western countries.

The lowland varieties are grown by the 'water-culture' or irrigation system. Many of the fields adjoin rivers whose waters are kept back by levees, through which the planter makes openings, known as flumes, which are closed by gates. The water is conducted through the fields in canals which are supplied with dams, so that the surface can be flooded to any required depth. The deposits of alluvial matter supplied by this system tend to prevent exhaustion of the soil. The ground is plowed to a depth of 5 or 6 in., and the surface pulverized by harrowing. The season for sowing is from the last of March till the first of June, varying somewhat with the locality. The seed is sown in drills at the rate of about two bushels per acre, or three bushels are sown broadcast. Some growers cover the seed with soil, others allow it to remain on the surface: in either case water is turned on till the ground is covered to a depth of 15 to 18 in. After the seed has germinated, the water is withdrawn, but it is turned on again when two leaves have appeared, and is allowed to remain for 7 to 10 days, when it is lowered so that the upper leaves will float over the surface. At this height the water is kept for several weeks, but is freshened by frequent changes. The only cultivation required is to pull up whatever weeds and aquatic plants may appear. As the stage of maturity approaches, indicated by the filling of the heads and the turning of the straw to a yellow shade, the water is drawn off; the stalks harden, and the ground dries, thus facilitating the work of harvesting. On good land the stalks reach a height of 4 to 6 ft., and are cut about 15 in. from the ground. When the stalks have dried for a day or two, they are bound in bundles and put in small stacks. After the crop is removed, the ground should be subjected to several light floodings, to kill the 'volunteer' R. and any weeds which may appear. Threshing does not remove the inner hull of the grain. For this purpose special and expensive machines are required, and the work is often done at large factories. The small and the broken grains are separated from the large ones, which form only about half the entire quantity: this is done by means of machines, fans, and screens.—Upland R. is grown in drills and is kept free from weeds by cultivation. It yields 15 to 40 bushels per acre. Good lowlands, properly irrigated, yield 40 to 80 bushels per acre and 1½ to 3 tons of straw. Clean R. weighs 45 to 48 lbs. per bushel. Most of the lowland R. is grown on fields which would not produce ordinary farm crops. In the Atlantic states the cultivation of the lowland R. is very unhealthful, but it is not found as injurious in the Mississippi valley. R. was introduced into S. C. by accident. A disabled ship from Madagascar found refuge in Charleston 1694, and the capt., as a token of appreciation of the kindness that he received, gave one of the citizens a sack of the grain. This was planted, and thus was laid the foundation of an extensive industry.

It is claimed that a little rice had been grown in Virginia previous to the above date. The cultivation of the crop was introduced into Louisiana 1718.

Rice-starch is largely manufactured in various European countries, in which it is sold under the name *Patent Starch,* and is used in laundries and muslin manufactories. Rice-straw is used to make straw-plait for bonnets. The waste of the mills, known as rice-meal, is said to be used largely in the adulteration of cheap flour. It is also fed to horses and cows, but its price is often too high to make it profitable for this purpose.

CANADA RICE (*Zizania aquatica*), the WILD RICE of N. America, is a species of grass quite different from the true rice, and of different genus. It is common in N. America, especially in the n.w. parts, growing in miry places or shallow water, often in the margins of lakes. It has a culm 7-10 ft. high, with broad diffuse leaves, and a large terminal panicle of male flowers, with a spike of female flowers at the summit. The flowers have six stamens. The seeds are about half an inch long, slender, farinaceous, affording very good meal, and much used by the Indians. In dry seasons this rice is sometimes cured for hay. On account of its value for wild-fowl, it is often sown in marshes, which they frequent. The seed is sold in New York for about 30 cents a pound.

RICE-BIRD: in the United States the bobolink, so called in the South Atlantic, where it is a serious pest in the late autumn to the rice crop; in the East Indies, a familiar and handsome finch-like weaver-bird (*Munia oryzivora*), also known as the Java sparrow and paddy bird. It possesses a large pinkish bill; the head and tail are black, the belly rosy, the cheeks of the male white, and the legs flesh-colored. It is dreaded in southern Asia on account of the ravages it commits in the rice fields, but is frequently brought to Europe and America as a cage-bird.

RICE LAKE: Wis., city, in Barro co.; on the Red Cedar river, and on the Chicago, Milwaukee & St. Paul railroad; about 45 m. n. by w. of Eau Claire. It is in a lumber region and the chief industries are connected with farm and lumber products. It has public and parish schools, a public library and private business schools. Pop. 3,100.

RICE PAPER: also called PITH PAPER, and more properly, as the substance is not derived from rice. The product of a small tree, 10 to 15 ft. high, known botanically as *Aralia (Fatsia) papyrifera,* which grows in many portions of Formosa. Japanese name, Tsuso; Chinese name, Tung Tsao. The pith is extracted by breaking the bark and outer woody portion, and forcing out the cylindrical core. The paper is produced by skilfully paring these cylinders of pith with a sharp knife as they are rolled upon the surface of a tile or other hard substance that will serve as a bed plate, the thickness of the sheet of

pith paper being regulated by the angle at which the knife is held. There are three grades of the paper, which is chiefly used for the manufacture of artificial flowers, and also for the painting of small fancy pictures, and to some extent for sun hats.

RICE, Alice Hegan: American writer: b. Shelbyville, Ky., 1870, Jan. 11. Her education was obtained at Hampton College, in Louisville, where in 1902 she married Cale Young Rice, himself an author and poet. Her first book, *Mrs. Wiggs of the Cabbage Patch* (1901), gained extraordinary popularity and placed her in the front rank of acceptable writers. Her other works are: *Lovey Mary* (1903); *Sandy* (1905); *Captain June* (1907); and many short stories. Since 1902 she has made her home in London.

RICE, Edmund: American military officer: b. Cambridge, Mass., 1842; d. 1906. He entered the Union army in 1861, received rank as captain, was voted a medal of honor by congress for bravery at Gettysburg, and was mustered out of the volunteer service with rank as colonel in 1865. He entered the regular army in 1866, was promoted colonel and in 1877 while on leave of absence served for a time on the staff of General Skobeleff in the Turko-Russian war. He was appointed inspector-general in 1898, and in 1902-3 was colonel of the 19th Infantry. He was retired in 1903. The trowel bayonet, stacking swivel, and knife-intrenching bayonet now in use in the United States army were his inventions.

RICE, Isaac Leopold: American lawyer: b. Wachenheim, Bavaria, 1850, Feb. 22. Coming to Philadelphia with his parents in 1856, he was educated at the Boys' Central High School of that city, and showing a genius for music was sent to Paris to complete his musical training. In 1868 he visited England and taught there music and the languages for a year when he settled in New York, teaching music for a time and then entering Columbia Law School, from which he graduated in 1880, taking prizes in constitutional and international law. He founded the School of Political Science and was lecturer (1882-3), and subsequently instructor in the Columbia Law School (1884-6). He is a specialist in railroad law and was counsel and director in the lines now constituting the Southern railroad, and for a time foreign representative of the Philadelphia & Reading railway. He has taken an active part in the application of electricity to transportation and is prominently identified with many financial interests. He founded *The Forum* in 1885 and is a leader in international chess. He has published *What is Music?* (1875), and has written many articles in leading reviews.

RICE, James: English novelist: b. Northampton, 1843, Sept. 26; d. Redhill, Surrey, 1882, Apr. 26. He studied at Queen's College, Cambridge, without taking a degree,

and in 1868 became editor and proprietor of *Once a Week*. He was called to the bar in 1871 and while waiting for clients he became London correspondent for the *Toronto Globe*. His first literary success was with the novel *Ready Money Mortiboy* (1872), written conjointly with Walter Besant. The novel was dramatized and produced at the Court Theater in 1874, Mar. Other novels written in partnership with Besant were: *With Harp and Crown* (1874); *The Son of Vulcan* (1875); *The Golden Butterfly* (1876); *The Monks of Thelema* (1877); *By Celia's Arbour* (1878); *The Chaplain of the Fleet* (1879); *The Seamy Side* (1881). Rice wrote also a *History of the British Turf* (1879).

RICE, William North: American educator: b. Marblehead, Mass., 1845, Nov. 21. He was graduated from Wesleyan University in 1865, and was professor of geology and natural history there 1867-84; and of geology after 1884. He was assistant geologist of the United States Geological Survey 1891-2, and president of the American Society of Naturalists in 1891. He has published *Geology of Bermuda* (1884); *Science Teaching in the Schools* (1889); *Twenty-five Years of Scientific Progress and Other Essays* (1894); and an edition of Dana's *Text-book of Geology* (1897).

RICH, a. *rĭch* [AS. *rice*, noble, rich: Goth. *reiks*, ruler: Ger. *reich;* Icel. *rikr;* Dan. *rig*, rich; Icel. riki, power]: wealthy; having ample means for the supply of wants; costly; yielding or producing largely; fertile; highly endowed; made with costly or highly seasoned ingredients, as a rich cake or dish; abundant; full of; perfect; having something precious: V. in *OE.*, to enrich. Rich'es, n. *-ĕz* [F. *richesse*, riches: E. *richcs* was originally a noun singular, but is now used as a plural]: abundance of lands, goods, or money; wealth; affluence; opulence; great plenty beyond wants. Rich'ly, ad. *-lĭ*, with abundance; with ample means; amply; truly. Rich'ness, n. *-nĕs*, the state of being rich; any good quality existing in abundance; fertility; productiveness; abundance of good ingredients, as in food. The rich, persons possessed of wealth.—Syn. of 'rich': wealthy; opulent; affluent; valuable; estimable; precious; costly; splendid; sumptuous; fertile; fruitful; abundant; generous; luscious; plentiful; ample; copious.

RICH HILL: city in Bates co., Mo.; on the Osage river, and on the Kansas City, F. S. & M., and the Missouri River railroads; about 83 m. s. of Kansas City. It is in an agricultural and coal region; in the vicinity of the largest coal fields in Missouri. Its chief industries are connected with the mining and shipping of coal. It has vitrified brick works, canning factories, a foundry, distillery, machine shops, and zinc smelters. It has an extensive trade in coal, farm products, canned goods, and brick. The principal public buildings are the churches and schools. Pop. (1910) 2,755.

RICHARD, *rĭch'ĕrd*, I., King of England, surnamed Cœur de Lion: 1157, Sep. 8—1199, Apr. 6 (reigned 1189–99); b. prob. at Oxford; third son of Henry II. by his queen Eleanor. In the treaty of Montmirail, 1169, Jan. 6, between Henry and Louis VII. of France, it was stipulated that the duchy of Aquitaine should be made over to R., and that he should do homage for it to the king of France; also, that he should marry Adelais, youngest daughter of Louis. In 1173 R. joined his mother and his brothers Henry and Geoffrey in their rebellion against the king. The rebels submitted 1174, Sep., when two castles in Poitou were allotted to R. In 1183 a second family feud broke out in consequence of R. refusing to do homage to his elder brother Henry for the duchy of Aquitaine. In this war, his father sided with R. against Henry and Geoffrey. It was ended by the death of Prince Henry, when R., actuated probably by jealousy of his youngest brother John, declared himself the liegeman of France for his possessions in that country. This step led to a war between the king of England and Philip of France, in which R. fought against his father. The balance of success being decidedly with France, a treaty in accordance with this fact was about to be executed, when, by the death of Henry II., 1189, July 6, R. became king of England. He landed in his own country 1189, Aug. 15, and was crowned in Westminster Abbey Sep. 3. In the hope of gaining salvation, and with the certainty of following the occupation which he loved best, he set out with an army to join the third crusade, then about to leave Europe. He united his forces to those of France on the plains of Vezelay, and the two armies (numbering in all 100,000 men) marched together as far as Lyon, where they separated, and proceeded by different routes to Messina, where they again met. Here R. betrothed his nephew Arthur to the infant daughter of Tancred, King of Sicily, with whom he formed a close alliance. The Sicilian throne was at that time claimed by Emperor Henry VI.; and the alliance with Tancred from this cause afterward proved very unfortunate for R. Having settled a difference between himself and Philip respecting his old engagement to Philip's sister Adelais, the English king, 1191, Apr. 7, sailed from Messina for Cyprus, carrying with him Berengaria, daughter of Sancho VI., King of Navarre. He had fallen in love with this princess, and he married her in the island of Cyprus, where he halted on his way to Palestine. But even love did not make him forget his favorite pastime of war; he attacked and dethroned Isaac Comnenus of Cyprus, alleging that he had ill-used the crews of some English ships which had been thrown on his coasts. Having then presented the island to Guy of Lusignan, he set sail 1191, June 4, and on the 10th reached the camp of the crusaders assembled before the fortress of Acre. The prodigies of personal valor which he performed in the Holy Land have made the name of Rich-

ard the Lion-hearted more famous in romance than in history. The man was the creation and impersonation of his age, and the reader who follows his career may perhaps be more interested than he would be by the lives of greater men, or by the history of a more important period. He accomplished no important object of his undertaking in the East, except the capture of Acre: twice he was in sight of Jerusalem, but retired without venturing an attack. Because of Saladin's failure to fulfil the terms of his surrender at Acre, R. ordered the massacre in cold blood of about 3,000 Mohammedan prisoners. 1192, Oct. 9, he set out on his return to England. After some wanderings and adventures, he became the captive of Emperor Henry VI., who shut him up in a castle in the Tyrol. The story of his discovery here by Blondel originated in France no further back than the century after R.'s death. John, meanwhile, ruled in England, and he and Philip of France had good reasons for wishing that R. should never return to his kingdom. He disappointed them; not, however, until he had paid a heavy ransom, and even, it is said, agreed to hold his kingdom as a fief of the empire. 1194, March 13, he found himself once more in England. His brother John, who had acted so treacherously toward him, he magnanimously forgave, but with Philip of France he could not deny himself the pleasure of a war. In the contest which followed, he was generally victorious, though in the end it was fatal to him: he was killed by an arrow shot from the castle of Chalus, which he was besieging. R., tall, ruddy, muscular, had the typical virtues and vices of chivalry: he was fearless and generous, but unscrupulous and ferocious. His reign wrought no service for England beyond supplying her poetry and legend with the name of a king which has become the nucleus of a hazy fame. —See *Chronicles and Memorials of Richard I.*, by W. Stubbs, from MS. in Library of Corpus Christi Coll., 1864.

RICH'ARD II., King of England: 1366, Apr. 13—1400, Feb. (?) (reigned 1377–99); b. Bordeaux; second son of Edward the Black Prince and Joanna of Kent. He succeeded to the throne on the death of his grandfather, Edward III., 1377, and during his minority the govt. was vested in a council of 12, from which were excluded the king's three uncles, John of Gaunt, Duke of Lancaster, the Earl of Cambridge, afterward Duke of York, and the Earl of Buckingham, afterward Duke of Gloucester. This arrangement is, however, supposed to have been collusive, and intended to lull the popular suspicion of Lancaster, under whose control the council really was. The reign of R. is interesting and important to the student of English constitutional history, but has not yet been perfectly elucidated. We find the recently established house of commons eagerly pressing forward to procure a share of political power, by means of the efficient engine of which it had then acquired sole control—the right of taxation. Again, we find the laboring

classes now beginning to aspire to be freed from their long bondage. The famous capitation tax, 1380, gave rise in the following year to the rebellion of Wat Tyler (see TYLER INSURRECTION). R. was married 1382 to Anne of Bohemia, daughter of Emperor Charles IV. The next two years were occupied with a war with France, transferred 1385 to Scotland, where for a while the king conducted it in person. In the absence of John of Gaunt in Spain, the Duke of Gloucester had put himself at the head of affairs; and an attempt which R. made at this time to free himself from control having been defeated, several of his counselors were put to death; which action was approved by parliament, by whom further executions were ordered among the king's adherents; and the sentences were carried into effect. In 1389, however, R., by a sudden movement, succeeded in throwing off the yoke. Gloucester was compelled to retire; but from indolence or lack of capacity, the king soon allowed the reins of govt. to slip from his own hands into those of the Duke of York, and Lancaster's son, Henry of Bolingbroke. In 1394 the queen died, and soon afterward a marriage treaty was concluded between R. and Isabella, infant daughter of Charles VI. of France. Gloucester reprobating this marriage, which seems to have been unpopular, R. caused him to be privately arrested and conveyed to Calais, where he died—or was murdered, as has been conjectured. On the meeting of parliament, the king had his own way; the Earl of Warwick was banished, and the Earl of Arundel beheaded. Having triumphed over his foes, R. began to quarrel with his friends. A misunderstanding having arisen between Bolingbroke (Henry, the king's cousin, son of John of Gaunt) and Mowbray, Duke of Norfolk, the king, desirous to be rid of both, sent the former into banishment for ten years, and the latter for life. But Bolingbroke had been assiduously cultivating the popularity which his cousin had been carelessly throwing away; and the result became apparent in 1399. R., on his return, in that year, from a military expedition in Ireland, found that the banished Bolingbroke had, in his absence, landed in England, that he had soon found himself at the head of a formidable army, and that the Duke of York had yielded and gone over to his side. The army which the king had had with him in Ireland, also, no sooner landed than it almost entirely passed over to the invader. R. found himself without force or friend, while Bolingbroke, now styling himself Duke of Lancaster, was at the head of 80,000 men. R. surrendered to his successful rival at Flint Castle, and was carried captive in his train to London. 1399, Sep. 29, he formally resigned his crown: on the following day the resignation was ratified by parliament, and the crown conferred on Lancaster (see HENRY IV.—of England). By order of the peers, R. was sentenced to perpetual imprisonment, and confined secretly in a castle. In the Feb. following his resignation, the nation was told that he

was dead, and his body, or what was supposed to be it, was brought with much pomp from Pontefract Castle, and shown to the people. There were rumors at the time of his having been murdered, and long afterward of his being alive and in Scotland. But nothing really is known regarding the end of Richard II. There is, however, little doubt that his death was by violence, and that it was the result of a conspiracy against Henry IV. which was discovered 1400, Jan. R. was slight and fair, with delicate features. His character was a combination of opposites, and is one of the enigmas of history.

RICH'ARD III., King of England: 1452, Oct. 2—1485, Aug. 22 (reigned 1483-85); b. Fotheringay Castle; youngest son of Richard, Duke of York, and great-grandson of Edmund, Duke of York, fifth son of Edward III. On the defeat and death of their father, 1460, he and his brother George, afterward Duke of Clarence, were sent by their mother to Utrecht, where they remained under protection of the Duke of Burgundy, until the crown was won by their eldest brother, Edward IV. In 1470 R., with Edward, remained in Flanders, whither they had fled on the success achieved for Margaret of Anjou by the Earl of Warwick. In 1471 he led the van of his brother's army at Barnet; he also rendered efficient assistance at the crowning victory of Tewkesbury. It is said that he and Clarence murdered Prince Edward, son of Henry VI., after the battle. It has also been popularly believed that he murdered Henry himself in the Tower. Now Duke of Gloucester, in 1472 he married Lady Anne Neville, daughter of Warwick and widow of Prince Edward. He has been generally accused of complicity in the judicial murder of his brother Clarence 1478, and Shakespeare has placed the charge almost beyond the power of historical criticism to efface. The evidence, however, seems to be almost nothing. In 1483, returning from an expedition into Scotland, he heard of the death of his brother the king. He met the Duke of Buckingham at Northampton, where it is believed that those measures were concerted which resulted in the beheading of Hastings and others, the confinement in the Tower of the infant children of the late king, and the placing of the English crown on the head of Richard III. His reign dates from 1483, June 26; and he was crowned at Westminster July 6. For some time he seems to have been popular. He was well received on a tour which he made in the n. counties. On reaching York, however, on his return, he heard of a formidable insurrection in the south in favor of his nephew, Edward V. But the bold and remorseless nature of R. on this occasion took full sway. It was soon known over the land that the royal children were dead. Little doubt has ever been felt that they were murdered, or that the deed was done at the instigation of their uncle. The insurrection was quelled, and Buckingham, who had been at the head of it, found guilty of treason and beheaded. The parliament, which met 1484, Jan.

23, declared the issue of the late king to be bastard, and the property of the late rebels confiscated. R. now offered to marry Princess Elizabeth, daughter of Edward IV., to his eldest son, Edward, on whose premature death he offered to marry the princess himself, his own queen being still alive. On the death of Anne, however, supposed to have been murdered by poison, 1485, Mar. 16, R.'s counselors dissuaded him from marrying Elizabeth, on the ground of the popular indignation which the step was sure to excite. Meanwhile the crimes to which his ambition had led him had excited the disgust and hatred of nobility and people. One by one his adherents were dropping off and crossing to France to join the Earl of Richmond. At last the storm burst: 1485, Aug. 7, Richmond landed at Milford Haven. Aug. 21 was fought the decisive battle of Bosworth, which deprived Richard of his crown and life, and decided the long war of the Red Rose and the White in favor of the House of Lancaster. R. had great energy and ability, but was utterly selfish, unscrupulous, and ferocious. It must, however, be kept in view that his age was one in which human life was held in little value, and deception regarded almost as an accomplishment. Traditional accounts are contradictory regarding his personal appearance: the story of his being a hunchback may be true, but is not proved.—See biographies by J. H. Jesse (1862), J. Gairdner (1878), and Alf. O. Legge (1885).

RICH'ARD, King of the Romans, Earl of Cornwall: see RICHARD PLANTAGENET.

RICH'ARD OF CIRENCESTER, *sĭs'ė-tėr* (L. *Ricardus Corinensis*): early English chronicler: 1335–1401; b. Cirencester, in Gloucestershire. Nothing is known of his family or circumstances. In 1350 he entered the Benedictine monastery of St. Peter, Westminster—whence he is sometimes called the 'Monk of Westminster'—and remained there for the rest of his life. His leisure was given to the study of British and Anglo-Saxon history and antiquities, in which pursuit R. is said to have visited numerous libraries and ecclesiastical establishments in England; and we know that 1391 he obtained a license from his abbot to visit Rome. One of R.'s principal works is *Historia ab Hengista ad Ann.* 1348, in two parts, of which the first (in the univ. library of Cambridge) treats of the affairs of England from the Saxon invasion to the death of Harold: two of his theological productions (formerly in the Peterborough Library) were *Liber de Officiis Ecclesiasticis* and *Tractatus super Symbolum Majus et Minus.* Above all these was long ranked *De Situ Britanniæ*, treatise on the ancient state of Great Britain. This work—whose authenticity was long doubtful—was (as was claimed) brought to light by Dr. Charles Julius Bertram, prof. of English at Copenhagen, 1747, who professed to have discovered it in the royal library there, and who sent a transcript of it, with a 'fac-simile' of the original, to the renowned English antiquary Dr.

William Stukeley, who published an analysis of it 1757, and fully accepted it as genuine. It is now commonly recognized as a forgery, having been demonstrated as such by Prof. J. E. B. Mayor in his ed. of R.'s writings (3 vols. 1863–69). A reprint of this forged work forms one of the 'Six Old English Chronicles' in Bohn's 'Antiquarian Library' (1848). Gibbon, the historian, was credulous enough to accept the work as genuine.

RICH'ARD PLANTAGENET, *plăn-tăj'ė-nĕt*, titular King of the Romans, Earl of Cornwall: 1209, Jan. 5—1272, Apr. 2; b. Winchester; second son of John, King of England. In 1226 he was created Earl of Cornwall by his brother Henry III. In 1232 he put himself at the head of the party opposed to Hubert de Burgh, whose influence was at that time supreme in the councils of the king. Immense wealth, a calm practical temperament, and a shrewd eye for his own worldly interest, were the elements which combined to make R. P. a considerable power in the state. His influence prevailed, and De Burgh was driven from his position with loss of honors and estate. In 1256 R. P. was elected titular king of the Romans; and though his election was disputed, he was crowned at Aix-la-Chapelle: subsequently, he exercised some of the nominal rights which belonged to his sovereignty. In the great struggle between Henry III. and his nobles, R. P. at first acted as mediator; later he took a decided part with his brother against the party headed by Simon de Montfort; and 1264, May 14, he was taken prisoner by that leader at the battle of Lewes. De Montfort shut him up in Kenilworth Castle, from which he was released at the end of a year. The rest of his life does not seem to have been marked by any event of historical importance. He was thrice married: 1230 to Isabel, daughter of the Earl of Pembroke; 1243 to Sanchia of Provence, sister of Queen Eleanor; and 1267 to Beatrice, daughter of Theodoric de Falkmonte. His character shows no great virtues nor great vices.

RICHARDS, *rich'ėrdz*, JAMES: missionary: 1784–1823; b. Mass. He graduated from Williams College 1809, and 3 years later from Andover Theol. Seminary. In college he became interested in foreign missions, and with Samuel J. Mills and Gordon Hall held prayer and conference meetings beside a haystack in one of the Williamstown meadows—a location which has, on this account, become historic. With 5 others he signed the paper to the Mass. Gen. Assoc. (Congl.) which resulted in the organization of the American Board of Commissioners for Foreign Missions. He was commissioned as a missionary by this soc. 1815, and was stationed at Ceylon. After suffering from a long illness, he sailed 1823 to the Cape of Good Hope, at which place he died.

RICH'ARDS, William : 1792, Aug. 22—1847, Dec. 7 ; b. Plainfield, Mass. He graduated from Williams College 1819, and from Andover Theol. Seminary 1822. In 1822, Nov., he was ordained, and went as a missionary of the Amer. Board to the Sandwich Islands. He was appointed chaplain to the king 1838, and also officiated as councilor and interpreter ; and on the recognition of the govt. by foreign nations 1842, he became ambassador to England. Three years later he became minister of public instruction. He died at Honolulu.

RICHARDSON, *rĭch'ĕrd-son*, Sir Benjamin Ward, M.D., LL.D. : b. Somerby, Leicestershire, England, 1828, Oct. 31. He studied at Anderson's Univ., Glasgow, but graduated in medicine at the Univ. of St. Andrews. He received a number of prizes for essays—one of £300 (the Astley Cooper prize 1856) on the coagulation of the blood. He became a member of the Royal College of Physicians by examination 1859, and was elected a fellow of the college 1861, a fellow of the Royal Soc. 1867, Croonian lecturer 1873, and has been made honorary member of many other learned societies in Europe and America. In 1865 he discovered a poisonous product common to the poisons of contagious diseases, and to which he gave the name *septine*, and 1866 the application of ether spray for destroying local sense of pain in surgical operations. Dr. R. has written much on public health, alcoholism, action of poisons, and other medical subjects. He originated and for a number of years edited the *Journal of Public Health*, and later edited the *Social Science Review*. His best-known works are *Diseases of Modern Life* (1876) ; *Results of Researches on Alcohol* (1877) ; and *Temperance Lesson-Book* (1877). In 1888 he published a novel, *The Son of a Star*, and contributed medical articles to periodicals 1890. He was president for many years of the London Med. Soc. Between 1884 and 1892 he published quarterly *The Asclepiad*, a periodical of original research and observation on the science, art, and literature of medicine, preventive and curative, all the work being from his own pen. He was knighted 1893 ; died 1896, Nov. 21.

RICH'ARDSON, Charles Francis : born Hallowell, Me., 1851, May 29. He graduated from Dartmouth College 1871 ; removed to New York 1872, and became one of the editors of the *Independent*, which position he held 6 years, when he joined the editorial staff of the *Sunday School Times* in Philadelphia. He returned to New York 1880, and was editor of *Good Literature*, and assoc. editor of the *Library of Universal Knowledge*, till 1882, when he was appointed prof. of Anglo-Saxon and English language and literature in Dartmouth College, which chair he still occupies (1891). He has published *A Primer of American Literature* (1876) ; *The Cross*, a poetical work (1879) ; *The Choice of Books* (1881) ; and *American Literature :* 1607–1885, 2 vols. (1887–89). His books show excellent judgment and cultivated taste.

RICH'ARDSON, Henry Hobson : architect : 1838, Sep. 29—1886. Apr. 28 : b St. James parish, La. He

graduated from Harvard College 1859; studied architecture in Paris, where, on account of the loss of his estate by the civil war, he was obliged to pay his way in large part by working in an office. He returned to the United States 1865; planned the Agawam Bank, the Unitarian Church, a fine building for railroad offices, and the North Congl. Church, in Springfield, Mass.; and quickly laid a broad foundation for his future fame. Among notable buildings which he designed are the Brattle Street Church and Trinity Church, Boston; the City Hall at Albany; and the Sever Hall and Austin Hall at Harvard College. He planned also some of the finest work in the N. Y. State Capitol building; designed several public libraries, railroad stations, and various public and private edifices. His office was finally established in Boston. At the time of his death he was working on plans for the Board of Trade building at Cincinnati, and the Pittsburgh, Penn., Court-house. He died at Brookline, Mass., after an illness of many years. His *Life*, by Mrs. Schuyler Van Rensselaer, was published 1888.

RICH'ARDSON, Israel Bush: soldier: 1815, Dec. 26—1862, Nov. 3; b. Fairfax, Vt. He graduated at West Point 1841, and was assigned to the 3d infantry, serving through the Florida war and on frontier duty until the Mexican war, in which he was engaged till its close, being brevetted capt. and maj. for bravery. In 1855 he resigned from the army and became a farmer in Mich. At the beginning of the civil war he was made col. of the 2d regt. of Mich. He was soon put in command of a brigade, which he led in the first battle of Bull Run and with which he helped to cover the retreat of the army. 1861, May 17, he was commissioned brig.gen. of vols.; and 1862, July 4, maj.gen. of vols. He commanded divisions in the Peninsular campaign and at South Mountain and Antietam. He died at Sharpsburg, Md., from a wound received at Antietam.

RICH'ARDSON, Sir John, K.C.B., M.D., LL.D.: English traveller and naturalist: 1787, Nov. 5—1865, June 5; b. Dumfries, Scotland; son of the provost of that town. He studied medicine at the Univ. of Edinburgh, and entered the navy as asst. surgeon. After 1810 he was stationed in Canada, and later in Georgia. He was appointed, 1819, surgeon and naturalist to the overland expedition under Franklin. 1825–27 he accompanied Franklin in his overland expedition to the mouth of the Mackenzie. After filling various responsible positions, R. received knighthood 1846; and two years later set out to search for his former travelling companion, Sir John Franklin, returning to England from his fruitless search 1849. In 1829–37 appeared his chief work, *Fauna Boreali-Americana* (4 vols.).

RICH'ARDSON, RICHARD: patriot and soldier: 1704-1780, Sep.; b. near Jamestown, Va. He was a land-surveyor in Va., but removed 1725 to N. C., engaged in farming, and was made col. of militia. He was active in the Indian border outbreaks, and 1775 was elected a member of the N. C. council of safety, and in the same year put down a tory revolt. For this he received the thanks of the provincial congress, and was made a brig.-gen. He was a member of the provincial congress of 1776, and one of the framers of the N. C. constitution. He took part in the defense of Charleston, and with its fall 1780, May 12, was taken prisoner and sent to St. Augustine; but, his health failing, he was soon released. He died at Salisbury, N. C.

RICH'ARDSON, SAMUEL: first great English novelist: 1689–1761, July 4; b. Derby; son of a joiner, whose ambition it was to educate his son for the clerical calling. The means were found deficient, and at the age of 17, with simply such education as a country school could then furnish, the young man fared forth to London, where he became apprentice to John Wilde, a printer. In the discharge of his business duties he was exact and careful, and on expiration of his apprenticeship he became foreman of Wilde's establishment. Some years afterward, he started as printer on his own account in Salisbury court, Fleet street; and, finding success assured, he wedded the daughter of his late employer. After her death 1731, he married a Miss Leake. By each lady he had six children, of whom only four daughters, with their mother, survived him. Throughout life, in his business relations, he was prosperous; very early he had influence to secure the lucrative post of printer of the journals of the house of commons; 1754 he became master of the Stationers' Company; and 1760 he purchased the moiety of the patent of king's printer, but died the year following.

Richardson's literary ability flowered late. Till he had passed the age of 50, his relations with literature, except in the way of printing it, were of the most slight and amateur kind; but in 1740, Nov., he surprised the world with his *Pamela*, which had instant and great success. Its continuation, to which the author was stung by the attempt of some hungry scribe to make a meal or two by the issue of a pretended sequel, entitled *Pamela in High Life*, was, however, pronounced much inferior. Memorable in itself, the work is now to most readers more so, as having suggested to Fielding his *Joseph Andrews*, originally conceived as a parody of Richardson's somewhat prudish moralities. The exquisiteness of the satire was not appreciated by Richardson; and he never forgave Fielding for it, nor could speak of him afterward with common temper or patience.

In 1748 he issued the first four volumes of *The History of Clarissa Harlowe*—by common consent his masterpiece

—a work which in its progress excited intense interest. His third and last great work, *The History of Sir Charles Grandison*, was published 1753. As a whole, this is less interesting than its predecessors; and in his representation of the life of the fashionable classes, of which he had no clear personal knowledge, the writer succeeds but poorly.

R.'s method of minute elaboration has some tendency toward an effect of tedium; moreover, the epistolary vehicle which he has chosen, though with certain advantages of its own, does not subserve rapidity of movement; and as his stories run to immense length, their perusal involves an effort of patience. But in the depth and simplicity of his sentiment, his knowledge of the heart, and his mastery of elemental emotion, there are sources of attraction; and in virtue of the overwhelming effects of pathos in which the interest of his *Clarissa* culminates, a place must always be assigned him among the few potent masters of genuine tragic passion. His specialty lies in subtle analysis of the intricacies of female mind and emotion; and in this particular field he has scarcely perhaps been surpassed. A curious sort of passionless confidential intimacy with women, it seems from his earliest years to have been his instinct to cultivate. At the age of 13 he was employed by three young women, who could not write, to indite their letters to their sweethearts; and in this work he both satisfied them and honorably kept their secret. Throughout his life he was the centre of a circle of female friends and admirers, who came to him with their little delicate secrets, as to a kind of lay father-confessor; and of the fruits of his nice observation of them he has given us to the full in his novels. The success of these is said to have bred in him a somewhat inordinate vanity, the only little flaw in a character unusually blameless and amiable. Within a dozen years he had a host of imitators in the field which he had discovered—the novel of domestic life and manners. Of works of less importance, R. published, besides occasional contributions to periodicals, *The Negotiations of Sir Thomas Roe in His Embassy to the Ottoman Porte from* 1621 *to* 1628 (1740, fol.); *An Edition of Æsop's Fables, with Reflections; Familiar Letters to and from Several Persons on Business and Other Subjects;* and in 1804 there appeared his *Correspondence*, edited by Mrs. Barbauld. See *The Works of R.*, with preface, etc., by Leslie Stephen (12 vols. 1884).

RICHARDSONIA, n. *rĭch-ėrd-sō′nĭ-ă* [after Richard *Richardson*, an English botanist]: genus of *Spermacocidæ*, trailing American herbs. The roots of *R. rosea* and *R. scabra* have some of the properties of ipecacuanha.

RICHELIEU, *rēsh'éh-lô*, F. *rēsh-le-éh'*, ARMAND JEAN DU PLESSIS, Cardinal, DUC DE: 1585, Sep. 5—1642, Dec. 4; b. Paris; of a noble but impoverished family. He was educated for the military profession at the Collége de Navarre. On the retirement to a religious life, however, of his elder brother, who held the bishopric of Luçon, R., with a view to succeeding to this preferment, betook himself to ecclesiastical studies, and underwent the preliminary examination for his degree at the Sorbonne. In 1607 he was consecrated Bp. of Luçon at Rome by Cardinal de Givry, in presence of Pope Paul V., and for some time devoted himself zealously to his duties in his diocese. At the states-general 1614, being appointed one of the representatives of the clergy, he attracted the notice of the queen-mother by an address which he delivered in the presence of the young king, Louis XIII.; and his appointment 1616 as sec. at war and foreign affairs seemed to open his way to success in political life; but in one of the vicissitudes of state intrigue common at that period, he soon found it necessary to withdraw from court, and return to his diocese. Meanwhile, a rupture occurred between the queen-mother and the king, and R., through the agency of a very remarkable man—the celebrated Capuchin Father Joseph—whose fortunes thenceforward were inseparably united with those of R., succeeded in effecting their reconciliation (1620, Aug.), and the restoration of the queen to her position at court. The foundation of R.'s influence was thus solidly laid; but he appears to have acted with tact and patient forbearance. He formed alliance with the powerful favorite Duc de Luynes, and 1622 was named cardinal, and two years later he was made minister of state—a position which, though frequently menaced and constantly beset by every variety of court intrigue, he retained to the end of his life. His first important measure was the conclusion of the alliance with England, by the marriage of Henrietta, sister of the king, with Charles, then Prince of Wales, 1624. His successful conduct of the war of the Valteline, an affair of much delicacy for a cardinal, as presenting the pope himself as the antagonist of France, tended still more to strengthen his power. His enemies, however, were constantly on the watch for opportunities of undermining his influence, and even of bringing about his death. The queen withdrew her favor, and the king, while he trusted him implicitly, never ceased to fear him. The crisis of the struggle came 1630, Dec. 11, when R. himself believed that his fate was inevitable. His disgrace, indeed, had been decided; the king, fearing to meet him face to face, had refused him an audience. His attempts to force an entrance to the king at the Luxembourg were defeated; but Louis, in his weak fear of R., having withdrawn to Versailles, the cardinal there succeeded in obtaining an audience, and, having once effectually overborne the weakness and alarmed the fear of the sovereign, his supremacy remained from that day

firmly and irrevocably established. This famous day is known as *Le Journée des Dupes.*

The administration of R. forms an epoch in the history of the constitution of the kingdom of France, as well as of its relations with other countries. It is memorable for several great measures, or series of measures, through which the posture of affairs underwent complete and permanent change. Of these, the first and the most lasting in results was that by which the absolute authority of the sovereign was established. From the mediæval period, the power of the French kings had been controlled, and in many cases overridden, by the feudal privileges of the nobles; and in the stormy conflicts of the 16th and of the beginning of the 17th c., the power of the crown had often been reduced to a cipher. By a succession of vigorous and energetic, and, it must be added, frequently unscrupulous measures, R. succeeded in breaking down the political power and subduing the arrogant assumptions of the great families; the heads of several among them being brought to the scaffold, while not a few were condemned to lifelong imprisonment. Among his most inveterate and most powerful adversaries was Gaston, Duke of Orleans, brother of the king; but R. triumphed over him, and even the queen-mother, Marie de' Medici, was obliged to bow before the unbending spirit of R., and to withdraw into exile at Cologne; and R., at the close of his career, delivered up the royal authority, which he had wielded 18 years, almost without a single constitutional check upon its absolute exercise.

Another of the great enterprises of this minister was the overthrow of the Huguenot party as a political power and a rival of the throne in France. The siege and capture of Rochelle, which he conducted in person (1628), was followed by the submission of the other Huguenot strongholds. R., however, secured for the Huguenot body a certain measure of religious toleration; and, on the whole, is confessed to have used his success in this conflict with moderation.

In the external relations of France, the great object of all his measures was the overthrow of the preponderance of Austria. With this view he did not hesitate to foment the internal disaffections of Germany, even allying himself with this design with the German Protestants, and even with the great champion of the Prot. cause, Gustavus of Sweden; and in connection with his anti-Austrian policy, he also took part with the disaffected Spanish provinces in the Netherlands. His designs on Belgium, however, failed of success. With similar views he lent his support to the revolt of Catalonia against Philip IV., and sent an army into Piedmont; and to no other part of his foreign policy did he adhere with such pertinacity to the very end of his life.

His internal administration of France has been severely criticised. He was reckless and unscrupulous in the use of means against his enemies, and the expend-

iture which his foreign wars entailed led to many oppressive impositions. His own personal expenditure was magnificent even to prodigality, but he is acquitted of all sordid schemes of self-aggrandizement.

Richelieu died at Paris. Notwithstanding his many distracting occupations, the writings which he left fil several volumes. Some of these, ascetical or controve sial, were written before his entrance into political life. Of his later writings, his *Testament Politique* and his *Memoirs* have attracted much notice. He even indulged occasionally in literature, and wrote two plays of no great reputation. He was a patron of literature, and to him France owes the establishment of the royal printing presses and of the French Academy.

RICHELIEU, CHAMBLAY, *shân-blā,* or SOREL, *sō-rĕl:* a river in Canada, in the Province of Quebec; the outlet of Lake Champlain, and a tributary of the Saint Lawrence river. It is 80 m. long, from one to two miles wide in some places and from 1,000 to 1,200 feet in other parts. It is navigable its whole length, except a short distance where rapids are an obstruction. A canal has been built around the rapids. In the valley of this river, Chamblay valley, were made some of the first settlements in Canada. The river was of importance in the discovery and settlement periods in America, as it was part of the great waterway into the interior; and for over two centuries, beginning with Champlain's Iroquois campaign in 1609, it was the scene of many battles.

RICHEPIN, JEAN, *zhŏn rēsh-păn:* French poet and dramatist: b. Médéah, Algeria, 1849, Feb. 4. He began the study of medicine with his father, a physician, but gave it up and entered the Ecole Normale in the Department of Literature. After 1870 he engaged in journalism, editing *L'Est,* and contributing to *Mot d'Ordre,* the *Corsaire* and *Vérité,* in which latter he published *Les Etapes d'un Refractaire.* Shortly afterward he published *Chanson des Gueux,* for which he was fined and obliged to spend a month in prison, during which time he wrote *Morts bizarres.* Works of this character have placed him among the most advanced of the naturalistic school; the boldness of his expression and the license of his subject have brought to him both applause and condemnation. In reply to criticism he admitted in 1881, in defense of his works, that his coarseness was perhaps unnecessary and repugnant, but not immoral. His works include verses under titles such as *Caresses* (1877); *Blasphèmes* (1884); *La Mer* (1886); *Mes Paradis* (1894); of romances *Madame Andre* (1874); *Sophie Monnier* (1884); *Césarine* (1888); *Braves Gens* (1888), besides many others; and of dramas *Nana Sahib* (1882); *Monsieur Scapin* (1886); *Le Flibustier* (1888); *Par le Glaive* (1892); *Vers la Joie* (1894); *Chemineau* (1897). He published also a work entitled *Théâtre Chimérique* (1896) in 27 acts in prose and verse.

RICHELIEU.

RICH'FIELD SPRINGS: village and summer resort in Otsego co., N. Y.; near the head of Schuyler lake; on the Delaware, Lackawanna & Western railroad; 7 m. from Otsego Lake, 16 m. n. of Cooperstown, 35 m. s.s.e. of Utica. It derives its name and popularity from several sulphur springs, noted for their efficacy in the cure of cutaneous diseases, and for historical associations as a favorite resort of the Indian tribes of eastern N. Y. It has some domestic manufactures. Pop.(1910) 1,503.

RICHFIELD, *rĭch'fēld:* Utah, county-seat of Sevier co.; on Rio Grande Western railroad; 135 m. s. of Salt Lake City. It was incorporated in 1878. It is the center of an agricultural and stock-raising region. The public school system includes a high school founded in 1896; there is also an association library. Pop. 2,090.

RICHFORD, *rĭch'fȯrd:* Vt., village in Franklin co.; on the Missisquoi river, and on the Central Vermont and Canadian Pacific railroads; 45 m. n.e. of Burlington. It was first settled in 1795 and incorporated as a village in 1878. The village is built on both sides of the river, which affords good water power; the lumber interests exceed all others in importance, and there are several lumber, saw, and planing mills. It is also in a maple sugar and agricultural region, and has a good trade, being a port of entry from Canada. It contains a high school, founded in 1892. Pop. (1910) 1,948.

RICHIBUCTO, *rĭsh-ē-bŭk'tō,* formerly LIVERPOOL: Canada, the capital of Kent co., New Brunswick, at the mouth of Richibucto river, 46 m. n.e. of Saint John. It is a port of entry and the eastern terminus of a branch line connecting with the Intercolonial railway at Kent Junction. The river is navigable for 15 m., and there is a considerable export trade in lumber and fish. Shipbuilding is carried on. Pop. 3,879.

RICHLAND CENTER: Wis., city, county-seat of Richland co.; on Pine river and on the Chicago, Milwaukee & St. Paul railroad; 55 m. n.n.w. of Madison. It was settled in 1849 and was made the county-seat in 1852. It is the center of an agricultural, stock-raising, and dairying region, and has a large export trade in flour, cheese, etc. The river furnishes water power for manufacturing; and the city contains flour and saw mills, a tannery, and brick kiln. There is a public high school. Pop. 2,380.

RICHMOND, *rĭch'mond:* city, cap. of Wayne co., Ind.; on Whitewater river, and on the Chicago, St. Louis & Pittsburgh, the Grand Rapids & Indiana, the Pittsburgh, Cincinnati & St. Louis, and the Cincinnati, Hamilton & Dayton railroads; 68 m. e. of Indianapolis, 70 m. n.n.w. of Cincinnati, 92 m. s. by e. of Fort Wayne. It is 700 ft. above tide-water, is in a rich agricultural region, and has important manufactories. A union depot accommodates all its railroads. The city has excellent drainage, efficient fire, water, gas, and electric light services. The

Richmond Interurban and the Dayton & Western traction lines connect the city with all nearby places. Richmond was settled and platted in 1816 by Friends from North Carolina. It was incorporated in 1834 and chartered as a city in 1840. The city has about 300 manufacturing establishments, employing about 3,500 persons. The chief manufactures are threshers, drills, plows, engines, boilers, carriages, milling machinery, clothing, flour, and dairy products. It is the commercial and industrial center of a large portion of the county. It has a number of fine public buildings, chief of which are the churches and schools. There are several churches, public school buildings, Roman Catholic parish, and Lutheran parish schools. Other educational institutions are Earlham College (Friends), Saint Mary's Academy (R. C.), one business college, and the Morrison-Reeves Free Public Library. The Eastern Indiana Insane Hospital is located here. The government is vested in a mayor and a council of 14 members, elected biennially by the people. The metropolitan police board is appointed by the governor. Pop. (1910) 22,324.

RICHMOND: city, county-seat of Madison co., Ky.; on the Louisville & N. and the Louisville & A. railroads; about 25 m. s.s.e. of Lexington and 135 m. e.s.e. of Louisville. It is in an agricultural region; in the vicinity is found an excellent building stone. The chief manufactures are tobacco and dairy products, and the trade is chiefly in farm and tobacco products, cattle, and horses. Its educational institutions are Madison Institute, under the auspices of the Church of the Disciples, Walter's Collegiate Institute, a Presbyterian institution, and public schools. One of the most desperate battles of the civil war was fought at Richmond. The Confederate forces under E. Kirby Smith defeated a much larger Federal force under Manson and Nelson. Pop. (1910) 5,340.

RICHMOND: city, county-seat of Ray co., Mo.; on the Atchison, Topeka & Santa Fé railroad; 58 m. s.e. of St. Joseph. The county-seat was removed to Richmond from Bluffton in 1827. It is the center of a fertile agricultural and stock-raising region; and there are coal mines in the vicinity which yield excellent quality of bituminous coal. It also has wagon and plow factories, flour mills, and a foundry. It contains the county courthouse, and has electric lights and modern waterworks. It is well provided with educational facilities, having two public high schools, of which one, the Lincoln high, is for colored pupils; and is also the seat of Woodson Institute, a coeducational secondary school under the auspices of the Meth. Episc. Ch., South. Pop. (1910) 3,664.

RICHMOND: an independent city and cap. of the state of Va.; on the James river, at head of tide-water, and on the Newport News and Mississippi Valley, the Richmond and Allegheny, the Richmond and Danville, the Richmond, Fredericksburg and Potomac, and the

1. The Remodeled Capitol.
2. Washington Monument and City Hall.

Richmond and Petersburg railroads; 22 m. n. of Petersburg, 100 m. s.-by-w. of Washington. The city is at the lower falls of the river, 151 m. from its mouth, and is built on a series of hills, chief of which are Richmond and Schockoe. The environments are naturally attractive, and the views of the city from its s. approaches, and from the city overlooking the river, are highly interesting. With its suburbs the city has an area of 52.25 sq. m. The river is here crossed by 5 bridges, uniting the city with Spring Hill, Manchester, and other suburban towns and villages. The streets are laid out regularly, and are lighted with gas and electricity. Both the gas and water plants are owned by the city; the water is taken from the river and distributed from two large reservoirs: the last one constructed, having a park, lake, and attractive boulevards, has become a popular local resort.

Commerce.—For many years R. has had large foreign and domestic trade, particularly in tobacco, flour, and manufactured articles; and its interstate traffic is growing rapidly, owing to important combinations recently made in the s. railroad system. It has regular steamship communication with New York, Philadelphia, Baltimore, and other Atlantic coast ports. During the fiscal year ending 1903, June 30, imports of merchandise were $165,610, and exports $2,385,000; but these figures are entirely misleading as a measure of its foreign trade, as its imports and exports are principally cleared through the custom-houses of New York and other northern ports. The amount of trade with the United States Atlantic coast cities and the cities and towns of the interior of the state is very large.

Industries.—The chief industries of the city are connected with the preparation of tobacco for local use and for shipment to outside markets. The Federal census of 1900 gives 49 establishments for the manufacturing of tobacco; the amount of capital invested, $3,054,450, and the value of the products for the year mentioned, $10,537,803. The establishments were 17 smoking and chewing tobacco factories, 22 cigarette and cheroot factories, and 10 stemmeries and packing houses. The foundries and machine shops number 18 establishments, with invested capital, $5,164,103; and the annual value of products $2,594,186. There were several establishments engaged in preparing fertilizers for market. Other manufacturing establishments were wagon and carriage works, lumber mills, railroad car factory, confectionery factory, and baking powder works. In 1900 the city contained 763 manufacturing establishments which represented 100 different industries. The capital invested in manufacturing concerns was $20,848,620; there were 17,885 persons employed, and the annual wages amounted to $6,447,929.

Education.—The city has an excellent school system, there are public and parish elementary schools for white and similar ones for colored pupils, a high school, normal school for whites and one for colored, Virginia Mechanics' Institute, which has evening classes, kindergartens, and a number of private schools. There are also secondary schools and colleges; Art School; Medical College of Virginia (1837); University College of Medicine (1893); Richmond Theological Seminary (Baptist), opened in 1867; Richmond College (Baptist), opened in 1832; and five public libraries with an aggregate of 60,000 volumes.

Public Buildings, etc.—R. possesses many buildings, memorials, and scenes of wide interest. The State Capitol, on the summit of Shockoe Hill, surrounded by a park of 12 acres, is a Greco-composite building, with Ionic columned portico, built 1796 after the plans, suggested by Thomas Jefferson, of the Maison Carrée of Nîmes, France. The park is beautifully ornamented and contains three fountains; Foley's bronze statue of 'Stonewall' Jackson; Crawford's equestrian statue of Washington, surrounded by bronze statues of Patrick Henry, Thomas Jefferson, Andrew Lewis, George Mason, John Marshall, and Thomas Nelson, by Crawford and Rogers; and a marble statue of Henry Clay. Within the capitol are Houdon's famous marble life-size statue of Washington, a marble bust of Lafayette, and portraits of many eminent people of Va. The governor's mansion is on the n.e. corner of Capitol square; the Federal building of granite in the Italian style is s. of the square; and the Brockenbrough House, occupied by Jefferson Davis while pres. of the Confederacy, and about to be converted into a museum of Confederate memorials, is in the vicinity. Of the former Libby and Castle Thunder prisons, the first has been removed to Chicago for the Columbian exposition, and the other has reverted to its original use as a tobacco warehouse. The new city hall, which cost $1,400,000, is the most ornate building in R. Other buildings of note are St. John's Church (Prot. Episc.), in which Patrick Henry made his impassioned 'liberty or death' speech 1775; the Monumental Church (Prot. Episc.), built on the site of the old Richmond Theatre to commemorate the burning of that building and the loss of many lives 1811; and the Tredegar iron-works. An imposing monument to Gen. Robert E. Lee was unveiled 1890, May 29. Bacon's Quarter Branch, Bloody Run, Belle Isle, the state fairgrounds, the falls of the river, the old cemetery of St. John's Church, are worth visiting.

The site of R. was temporarily settled by the English 1609. A mill was built near the falls by William Byrd 1737, and soon afterward a warehouse; and in its village state the place was known as Byrd's Warehouse. In

1742 it was incorporated and laid out as a town; 1779 was made the capital of the commonwealth; 1781 was taken and burned by the British under Benedict Arnold; 1861 became the capital of the Confederate states; during the civil war was the objective point of the principal milit. operations of the Union army in Va.; and 1865, May, was evacuated and partly burned by the Confederates. Pop. (1910) 127,628.

RICH'MOND: rising town of Surrey, England, 10 m. w.s.w. of London by railway, partly on the summit and declivity of Richmond Hill, and partly on the level right bank of the Thames. The parish church contains the tombs of Thomson the poet and of Edmund Kean the tragedian. The banks of the Thames are studded with villas, and around the town are nurseries and kitchen-gardens. The people subsist chiefly by providing for the immense number of visitors and pleasure-seekers who frequent the town, especially during summer. Pop. about 31,700.—R., formerly called Scheen or Sheen, received its present name from Henry VII., who named it after his own earldom. It was a royal residence in the time of Henry I., and since that time the sovereigns of England have frequently resided here, and here Edward III., Henry VII., and Elizabeth died.

RICH'MOND: market-town and parliamentary and municipal borough in the N. Riding of Yorkshire, England, on the left bank of the Swale, 42 m. n.w. of York. The parish church is chiefly in Gothic, but partly in Norman architecture. Though the trade of R. is now much less than in earlier ages, iron and brass founding, and tanning, are carried on, and there are a paper-mill and several corn mills. Pop. of municipal borough (1900) 4,200.—The earldom of Richmond was conferred by the Conquerer on his kinsman Alan Rufus, Count of Bretagne; but came into the possession of the crown when Henry, Earl of Richmond, succeeded Richard III. as Henry VII. The title of Duke of Richmond was afterward conferred by Charles II. on his son Charles Lennox, in whose family it remains. The castle, surrounded by picturesque scenery, stands on a rock overlooking the river.

RICHMOND COLLEGE, located at Richmond, Va. It was founded in 1832 by the Baptists under the name of the Virginia Baptist Seminary; the name was changed to Richmond College in 1840. The work of the collegiate department is divided into nine schools, as follows: (1) Latin language and literature: (2) Greek language and literature; (3) French and German; (4) English language and literature; (5) mathematics; (6) physics; (7) chemistry; (8) philosophy; (9) history. There is also a School of Law.

RICHMOND, Dean: American capitalist: b. Barnard, Vt., 1804, Mar. 31; d. New York, 1866, Aug. 27. He engaged successfully in the refining and selling of salt at 15, was a director in a Syracuse bank before he was of age and afterward engaged as a shipping and produce merchant at Buffalo. He was a leader in the movement which consolidated seven separate corporations into the New York Central Railroad Company in 1853, was its vice-president in 1853-64 and president in 1864-6. He was a recognized political leader, but declined public office.

RICH'MOND, Legh: clergyman of the Church of England, and tract-writer: 1772, Jan. 29—1827, May 8; b. Liverpool, England; son of a physician. He graduated at Trinity Coll., Cambridge, 1794; served as curate in the Isle of Wight; was chaplain of Lock Hospital, London; rector of Turvey, Bedfordshire; also, chaplain to the Duke of Kent. Wilberforce's *Practical View* early influenced his mind for good. He is everywhere known as the author of *The Dairyman's Daughter* and other tracts, some of which were printed in millions of copies in many languages. His collected tracts were published 1814, entitled *Annals of the Poor.* He published also *Domestic Portraiture, Memoirs of Three Children,* and edited *Fathers of the English Church.* His Memoir by Grimshaw, and Life by Bedell, appeared 1828 and 9.

RICHMOND, Sir William Blake: English painter: b. London, 1843, Nov. 29. He studied in the schools of the Royal Academy, where he received two silver medals in 1857 and had his portrait of his two brothers hung at the exhibition in 1861. He has traveled extensively in Italy, Greece, and Egypt studying the remains of ancient art, whence he has derived many subjects for his work. From 1878 to 1883 he was Stade professor at Oxford. His works include *The Procession of Bacchus* (1865-8); *The Life of Women* (1870), a series of frescoes for J. S. Hodgson of Haslemere; *Electra at the Tomb of Agamemnon* (1877); *Behold the Bridegroom Cometh* (1881); *Release of Prometheus* (1882); *Audience at Athens during the Representation of Agamemnon* (1885), now in the Birmingham Gallery. He has painted portraits of Darwin, Gladstone, Browning, William Morris, Holman Hunt, and Lord Lyttelton. Most notable of his works are the interior decorations and the glass mosaics of St. Paul's Cathedral. This work was executed by a staff trained under his personal supervision. He is an earnest advocate of the development of mosaic work in England, believing that this art should be applied only in the country and under the conditions of light in which the finished product is to remain. In 1895 he became a Royal Academician, and has been professor of painting at the Royal Academy. Consult his article on Mosaics in Vol. XXXI. of the New Volumes of the *Encyclopædia Britannica.*

RICH'MOND-EARTH: in *geol.*, an earth or bed near Richmond, Va., of Eocene or Miocene age, composed largely of diatoms.

RICHMONDITE, n. *rĭch'mond-īt* [after *Richmond*, Mass., where found]: a variety of Gibbsite.

RICHTER, Adrian Ludwig: German painter and designer: b. Dresden, 1803, Sept. 28; d. there 1884, June 19. His father, Carl August Richter, the well-known copperplate engraver, was his first teacher, as he was his father's collaborateur in the production of landscapes in black and white. In 1820 he accompanied Prince Narischkin in a journey through France as draughtsman to illustrate that nobleman's travels; subsequently he spent three years, ending 1826, in Italy. He next applied himself to study the masters of the North Holland School, and chose J. Schnorr as his especial model and standard of excellence. Returning to Germany he was appointed in 1828 to a position in the School of Design at Meissen, which he held for 10 years, meanwhile acquiring a popular reputation as illustrator of *The Vicar of Wakefield* and *Popular Books of Germany.* He inaugurated an epoch in German illustrative art by his sympathetic interpretation of common life in Germany, his tender humor and refined fancy. While he drew on wood for book illustration, he also executed numerous etchings, mostly of Italian landscapes. The most important of his landscapes in oil, which, however, are marred by a certain coldness of treatment, are: *Storm on Mount Gerone* (1830, in the Museum, Frankfort-on-Main); *Harvest Time on the Roman Campagna* (1833, Leipsic Museum); *Schreckenstein near Aussig; Landscape in the Riesen Mountains;* etc. After working for some years as professor of landscape painting in the Dresden Academy, he retired in 1876 on a pension provided by the German emperor. Consult: his autobiography, *Lebenserinnerung eines deutschen Malers* (1855); Hoff, *Adrian Ludwig Richter, Maler und Radierer* (1877).

RICHTER, Armilius Ludwig: German jurist: b. Stolpen, Saxony, 1808; d. 1864. He was educated at Leipzig and subsequently held the professorship of law at Leipzig, Marburg and Berlin universities. He was also privy-councilor of the government and councilor-in-chief of the consistory. His chief publications are *Corpus Juris Canonici* (1833-39); *Beiträge zur Kenntnis der Quellen des canonischen Rechts* (1834); *Canones et Decreta Concilio Tridentini* (1853); and *Lehrbuch des katholischen und evangelischen Kirchenrechts* (1842-6).

RICHTER, Eugene: German politician: b. Düsseldorf, 1838. He was educated at Bonn, Heidelberg and Berlin, and in 1864 was elected burgomaster of Neuwied, but owing to his liberal views his election was not confirmed. In 1867 he was elected to the North German Diet, in 1869 to the Prussian House of Deputies and in 1871 to the Reichstag, where he became a leader of the Progres-

sive party and later of the Radical. In 1885 he founded the *Freisinnige Zeitung*. His publications include *Politesches A. B. C. Buch* (1879-98); *Die Irrlehren der Sozial demokratie* (1890); *Sozial-demokratische Zukunftsbilder* (1891); *Im alten Reichstag, Erinnerungen* (1894); etc.

RICHTER, GUSTAV: German painter: b. Berlin, 1823, Aug. 31; d. there 1884, Apr. 3. He studied under Eduard Holbein in Berlin and Cogniet at Paris, also studied at Rome. He was professor of the Berlin Academy and honorary member of the academies of Munich and Vienna. His first work to attract attention was the *Raising of Jairus' Daughter* (1856). In 1864 he received the Grand Medal at Berlin; other medals have been conferred on him at Paris, Brussels, Vienna, and Philadelphia. His works are reproduced in vivid colored chromos. He painted many European celebrities, and of Americans a notable portrait of George Bancroft, the historian.

RICHTER, *rĭch'tėr*, JOHANN PAUL FRIEDRICH (commonly known as 'JEAN PAUL'): German humorist and sentimentalist of the greatest singularity, hence called by his countrymen *Der Einzige* (The Unique): 1763, Mar. 21—1825, Nov. 14; b. Wunsiedel, Bavaria. His father, a poor schoolmaster at Richter's birth, subsequently became parish priest at Schwarzenbach, on the Saale; but his circumstances always remained straitened, and he died burdened with debt, while his son was attending the gymnasium at Hof. Nevertheless, Richter went to the Univ. of Leipzig 1780 to study theology, which did not prevent him from roving freely over the whole circle of literature. The exact extent of his scholarly acquirements is not known; his studies were never systematic, and it is probable that he was not deeply read in any single branch of learning; but he carried in his head or in his note-books a vast confused miscellany of facts, literary, scientific, philosophical, and theological, and strewed them with oriental profusion over the pages of his works, where they do duty as metaphors, or illustrations, after the most grotesque and wonderful fashion. The English satirists, Pope, Swift, and Young, appear to have been special favorites with him; and among his own countrymen, Hamann and Hippel. But the most marvelous thing about his student-life was not the extent or variety of his reading, but the fact that he had the heart to read at all. During the whole time he was in miserable poverty. He could hardly get a single private pupil, and passed many a day without tasting food. Hunger was, in truth, his constant companion. In desperation he betook himself to literature for a subsistence, but it was long before he won recognition. His first composition, *Das Lob der Dummheit* (The Praise of Folly), modelled on the *Moriæ Encomium* of Erasmus, could not find a publisher; his second, written, he tells us, while he was surrounded

by 'unpaid debts and unsoled boots,' *Grönländische Processe* (Greenland Lawsuits, 2 vols. Berl. 1783–85), did succeed in getting itself published, but not read, and at length the heroic fortitude of R. gave way. In 1785 he fled from the city to avoid imprisonment for debt, and took refuge with his mother at Hof. Here his circumstances were but little better; and 1786 he was glad to accept a tutorship at Topen, in the family of Herr von Oerthel. In 1790, at the request of several families of Schwarzenbach, he removed thither to take charge of the education of their children, and lived as a private schoolmaster for some years. Meanwhile, he had not given up authorship. In 1788 appeared at Gera his *Auswahl aus des Teufels Papieren* (Selection from the Devil's Papers), which, however, in spite of its captivating title, did not prove more popular than its predecessors. R. seemed destined to failure as a writer. His sarcastic, far-glancing, and grotesquely-sportful humors were so unlike anything else in literature, and so oddly, even extravagantly, expressed, that the mass of readers could make nothing at all of them, and perhaps charitably regarded the author as crazy. But in 1793 the turning-point in his fortunes and fame occurred. In that year, a work which he had published at Berlin, *Die Unsichtbare Loge* (The Invisible Lodge), a sort of romance based on his experience as a schoolmaster, was unexpectedly successful, and R. began to grow a little more familiar with the sight of gold. It was followed by *Hesperus* (4 vols. Berl. 1794), the work by which perhaps he is best known out of Germany; *Quintus Fixlein* (Baireuth 1796); *Biographische Belustigungen unter der Gehirnschale einer Riesin* (Biographical Recreations under the Cranium of a Giantess, Berl. 1796); *Blumen-, Frucht-, und Dornenstücke* (Flower, Fruit, and Thorn Pieces, 4 vols. Berl. 1796–7), whose opening chapter contains his magnificent 'Dream of the Dead Christ,' translated into English by Carlyle; *Jubelsenior* (The Parson in Jubilee, 1797); and *Das Campanerthal* (Erfurt 1798), a work on the immortality of the soul, which attracted the notice and won for its author the friendship of Herder. R. was now one of the greatest celebrities of Germany; his books had become quite the rage, especially among educated women. He himself, too, was personally a great favorite; there was something in his conversation and manner so winning, joyous, and charmingly tender, that it excited not only friendship, but love. We read of one brilliant woman, Charlotte von Kalb, who actually sought to obtain a divorce that she might marry R.; and of another who committed suicide because he would not return her unlawful passion. This last incident affected R. profoundly. He was not only perfectly innocent in all his relations with the other sex, but pure and high-minded, and he had remonstrated with the unhappy maiden in the most wise and delicate manner. In 1801, after he had become famous, he married Caroline Mayer, daughter of Prof. Mayer of Berlin, and with

his young wife travelled about Germany, visited Goethe and Schiller, though not becoming intimate with either, and formed a closer acquaintance with old Gleim, Wieland, etc.; but ultimately settled at Baireuth, in Bavaria where he applied himself with the most honorable assiduity to work. His aerial, fantastic, many-hued creations—his solemn images of glory and gloom—his riant humors—his burlesque speculations on life, manners, and, indeed, on the *omne scibile*—his innumerable descriptions of nature, soft-glittering as with morning dew, flowed from him as from inexhaustible fountains. The productions belonging to his later period of a humorous kind are: *Titan* (4 vols. Berl. 1800–03), considered by R. himself his greatest work; *Flegeljahre* (happily rendered by Carlyle 'Wild Oats,' 4 vols. Tüb. 1804–5); *Katzenberger's Badercise* (2 vols. Heidelb. 1809); *Des Feldpredigers Schmelzle Reise nach Flätz* (Tüb. 1809); and *Der Komet, oder Nikolaus Markgraf* (3 vols. Berl. 1820–22). Among works professedly reflective or philosophical (though the elements of humor and poetry are not absent) are: *Vorschule der Aesthetik* (3 vols. Hamb. 1804); *Levana, oder Erziehungslehre* (Brunswick 1807), a treatise on education; and numerous other pieces. In his latest years he was afflicted with decay of his physical powers, and in his last year with total blindness. The death of his son Max, 1821—a youth of great promise—inflicted an incurable wound on his heart.—See *Wahrheit aus Jean Paul's Leben* (Bresl. 1826–33), a work begun by R. himself; Döring's *Leben und Charakteristik Richters* (2 vols. Leip. 1830); Spazier's *Jean Paul Friedrich Richter* (5 vols. 1833); Planck, *Jean Paul's Leben* (1868); Nerrlich; *Jean Paul und seine Zeitgenossen* (1876). Some of his pieces have been translated into English by Carlyle and others; Carlyle has also given us two admirable essays on the life, writings, and genius of the man.

RICIMER, *rĭs'ĭ-mẽr:* distinguished commander and political actor in the Roman empire: d. 472; son of a chief of the Suevi and a daughter of Wallia, King of the Visigoths. He was reared in the court of Valentine III.; attained the rank of *comes* of the empire, serving with distinction under Actius. He was hailed 'Deliverer of Italy,' after overcoming the Vandals at sea near Corsica, and on land near Agrigentum. Having deposed the emperor Avitus, he was *de facto* ruler of Italy (his birth preventing his assuming the imperial title), under the name 'patrician,' conferred by Leo 457. He successively created and overthrew three emperors, Majorian, Libius Severus, and Anthemius, having married a daughter of the last. He died of fever, in the reign of the next emperor, Polybius.

RICINIC, a. *rĭ-sĭn'ĭk* [L. *rĭcĭnus*, the castor-oil plant]: applied to an acid, being one of the products obtained from the distillation of castor-oil at a high temperature. RICINUS (see CASTOR-OIL PLANT, under CASTOR-OIL).

RICININE, n. *rĭs'ĭn-īn* [mod. L. *ricinus*]: in *chem.*, an alkaloid found in the seeds of the castor-oil plant *Ricinus communis*, and in those of *Croton Tiglium*.

RICINOLEINE, n. *rĭs-ĭn-ŏl'ē-īn* [L. *ricinus*, castor-oil plant; *oleum*, oil]: in *chem.*, a fatty substance obtained from castor-oil, of which it is the chief constituent.

RICK, n. *rĭk* [AS. *hreac*, a heap: Icel. *hraukr*, a heap of fuel: Gael. *ruc*, a rick, a stack: Norw. *röyk*, *rauk*, a small heap, as of corn-sheaves, or of turf: Dan. *ryg*]: a heap of corn or hay regularly piled up in the field or open air, and usually covered with thatching: V. to pile up in a heap in the open air, as grain in the ear, or hay. RICK'ING, imp. RICKED, pp. *rĭkt*. RICKLE, n. *rĭk'l*, in *Scot.*, a small heap. RICK-CLOTH, n. tarpaulin or canvas cloth placed over ricks or stacks to protect them from wet. RICK'STAND, n. the foundation of timber, or other material, on which a rick is built.

RICKARDS, *rĭk'ardz*, MARCUS SAMUEL CAM: English poet and naturalist: b. Exeter, 1840, Apr. 28. He was educated at Oxford, admitted a solicitor in 1862, and practised for many years in Bristol. In 1876 he took priest's orders in the English Church, was curate of Holy Trinity at Clifton, near Bristol, till 1889, and since that date has been vicar of Twigworth, Gloucestershire. Among his many published works, mainly in verse, are: *Creation's Hope* (1890); *Poems of Life and Death* (1895); *Poems of a Naturalist* (1896); *Musings and Melodies* (1902).

RICKAREES, *rĭk-a-rēz'*, or ARICARAS, *a-rĭk'a-ras:* tribe of Pawnees (q.v.), otherwise known as Rees, or Black Pawnees; named Arickaree in govt. reports; called by themselves Starrahhé or Pauani. Originally very numerous, they separated from the Platte valley Pawnees in the 18th c., and led a wandering life, were greatly reduced by small-pox and wars with other tribes and with whites, until 1862, when they were settled on the Fort Berthold reservation (junction of the Yellowstone and Missouri rivers) with the Mandans and Minnetarees. They number about 350.

RICKETS, n. plu. *rĭk'ĕts* [properly *wrickets*—from *wrick*, twist: the technical term *Rachitis* is simply a Grecized form of the Eng. word, and not a true formation from Gr. *rhache*, backbone]: constitutional disease, characterized chiefly by a curvature of the shafts of the long bones of the arms and legs, and enlargement of their articular extremities—the result of deficient appropriation of earthy principles by their structures. RICK'ETY, a. *-ĕt-ĭ*, affected with rickets; feeble in the joints; imperfect and unstable. The characteristic symptom in rickets is the imperfect development, atrophy, softness, and consequent distortion of some or many of the bones. The bones thus affected consist of a sort of gelatinous tissue, which will bend without breaking; and they are so soft that they may be cut with a knife. On microscopico-

chemical examination, the structural arrangement of the bone is found to be unaffected, but there is great deficiency of the earthy salts to which the normal bones owe their firmness. While 100 parts of healthy bone contain about 32 per cent of organic matter and 68 per cent of inorganic matter or earthy salts, the proportions are altogether reversed in rickets. The weight of the body acting on bones thus constructed causes them to bend, and the thighs or shins are abnormally arched, or the spine is curved, or, in slighter cases, only the normal form of the ankle is modified. In aggravated cases, the chest is so affected as to give rise to the condition known as *pigeon-breasted;* the lower jaw is imperfectly developed, and the teeth project; and the pelvis becomes so altered in form as to render future child-bearing in the highest degree perilous. Rickets is exclusively a disease of childhood, and generally attacks the children of the poor.

The treatment must be mainly directed to improvement of the general health. Free exposure to pure, bracing air, sponging with sea-water, or sea-bathing if the little patient can bear it, an abundance of animal food, cod-liver oil, and the iodide of iron include all that need be said about general treatment.

RICKETSON, *rĭk'ĕt-sŏn,* WALTON: American sculptor: b. New Bedford, Mass., 1839, May 27. He took up sculpture in 1870, and has since produced portrait busts of Bronson Alcott, Louisa M. Alcott, Thoreau, R. W. Emerson and George William Curtis, besides intaglios and bas-reliefs. He was also the projector and designer of the Gosnold memorial tower on the Island of Cuttyhunk, Mass., in 1902. He has edited *Daniel Ricketson and His Friends* (1902); *New Bedford of the Past* (1903); etc.

RICKETTS, *rĭk'ĕts,* JAMES BREWERTON: American military officer: b. New York, 1817, June 21; d. Washington, D. C., 1887, Sept. 22. He was graduated from West Point in 1839, served in the Mexican war, where he was engaged at Monterey and at Buena Vista, was promoted captain in 1853, and fought in the Seminole war in Florida. He afterward served on the Texas frontier until the outbreak of the civil war, when he assisted in the defense of Washington and the capture of Alexandria. He participated in the first battle of Bull Run, and was brevetted lieutenant-colonel and brigadier-general of volunteers. He commanded a division of Chantilly, South Mountain, and Antietam, in 1863 he received promotion as major of artillery in the regular army, was in command of a division in the Richmond campaign, and fought in the engagements from the battles of the Wilderness to the investment of Petersburg. In 1864 he served under Sheridan in the pursuit of Early's army. He was brevetted major-general in the regular army in 1865, and in 1865-6 was in command of a district in Virginia. He was mustered out of the volunteer service in 1866, and in 1867 retired from active duty.

RICKMAN, *rĭk'man*, THOMAS: English architect: 1776–1841, Mar.; b. Maidenhead. He tried several employments in early life, managed his father's business of druggist, and afterward became a clerk in an insurance office, though he seems to have always had a love for architecture. In 1808 he began to give his full attention to it, and wrote the classification of Gothic styles, which has rendered him famous. He first pointed out the features which distinguish the different periods of that style. He divided it into four periods, Norman, Early English, Decorated, and Perpendicular (q.v.); and these names and the periods that he assigned to them are still the most frequently used. He became an architect in Birmingham, and designed numerous buildings, especially churches. His work, *An Attempt to Discriminate the Styles of Architecture in England from the Conquest to the Reformation*, has passed through several editions—the best that by Parker of Oxford (1847).

RICOCHET, n. *rĭk'ō-shā'* or *rĭk'ō-shĕt'* [F. *ricochet*, a rebound on the water, duck and drake]: in *gunnery*, the firing of shot or shell in such a manner as to insure its striking the ground at a certain point, and afterward bounding along the surface; the guns fired for ricochet are but slightly elevated, and have a diminished charge. R. firing is extremely efficient both in its actual and in its moral effect in clearing the face of a ravelin, bastion, or other rather long line of fortification. If well directed, the R. shot bounding along will dismount guns, scatter the gunners, and intimidate the garrison. Vauban first introduced R. firing at the siege of Philipsburg 1688. The defense against it consists in earthen traverses along the threatened line, or in a bonnet (see FORTIFICATION) at the point of parapet nearest the enemy. In the field, R., where the shot or shell is made to bound forward at least ten times, produces most disastrous and demoralizing effects on masses of cavalry and infantry, whom it hews down in long lines. RICOCHET, v. to fire shot or shell from a gun so as to bound along the surface. RIC'OCHET'TING, imp. *-shĕt'tĭng*. RIC'OCHET'TED, pp. *-shĕt'ĕd*.

RICORD, *re-kor'*, PHILIP, M.D.: French physician; 1800, Dec. 10—1889, Oct. 22; b. Baltimore, Md.; son of a wealthy shipowner who had gone to that city 1790 to repair his fortunes. R. went 1820 to Paris, where he was attached in succession to the Hôtel-Dieu under Dupuytren, and to the Pitié under Lisfranc. He graduated M.D. 1826; but was unable, from scantiness of his private means, to begin practice in Paris. His professional career, therefore, commenced at Olivet, near Orleans, and was thence transferred to Croüy-sur-Ourcq, where he rapidly rose to distinction. In 1828 he returned to Paris, where he delivered two annual courses of lectures at the Pitié on surgical operations; and was appointed surgeon-in-chief to the hospital for venereal diseases. This post he held with brilliant success till

his retirement 1860, Oct. It was here that he won world-wide reputation in his specialty—a reputation due to his combination of accurate physiological and pathological knowledge with great manual dexterity as a surgeon, and felicitous inventiveness and resource as a physician. He improved the classification of enthetic diseases; and at the Venereal Hospital delivered annually, from 1834, a course of lectures on syphilology. For his suggestions on the cure of varicocele and on the operation of urethroplasty he received 1842 one of the Montyon prizes. R.'s practice was long the most extensive and the most lucrative in Paris, insomuch that, while an inmate of the debtors' prison at Clichy, he was literally besieged by crowds of patients. He became successively member of the Acad. of Medicine (section of surgical pathology); member of the Surgical Soc.; and consulting surgeon to the Dispensary of Public Health. In 1862, he was appointed physician in ordinary to Prince Napoleon; and 1869 consulting surgeon to the emperor; having 1860, Aug. 12, been raised to the distinction of commander of the Legion of Honor. His works are numerous, the more important being: *On the Employment of the Speculum Biviale* (1833), invented by himself; *On the Blennorrhagia of the Female* (1834); *On the Employment of Mercurial Ointment in the Treatment of Erysipelas* (1836); *The Monography of Chancre* (in which he gives a detailed exposition of his own system); *Theory of the Nature and Treatment of Epididymitis* (1838); *Treatise on Venereal Maladies* (1838); *On Blennorrhagic Ophthalmia* (1842); *Iconographical Clinic of the Venerea' Hospital* (1842–51); and *On Syphilization and the Contagion from Secondary Accidents* (1853). He has also contributed to the medical journals a multitude of Memoirs, Observations, Researches, and Communications on his specialty. His latest works are entitled *Letters on Syphilis* (3d ed. 1863), and *Lectures on Chancre* (2d ed. 1860), remarkable for fluency and grace of style.

RICTUS, n. *rĭk'tŭs* [L. *rictus*, the mouth wide open—from *ringor*, I show the teeth]: in *bot.*, among labiate or lipped corollas, the condition of the lower lip pressed against the upper, so as to leave only a chink between them.

RID, v. *rĭd* [AS. *hreddan;* Icel. *hrioda*, to clear away: Dan. *rydde*, to grub up, to clear: Ger. *retten*, to deliver: Dut. *redden;* Bav. *rieden*, to clear away: Scot. *red*, to set in order]: to free; to deliver; to clear away; to disencumber; to remove by violence: ADJ. clear; delivered; freed. RID'DING, imp. RID, pt. pp. RID'DANCE, n. *-dans*, act of clearing away; deliverance; escape. To GET RID OF, to free one's self from.

RIDDEN: see under RIDE.

RIDDLE, n. *rĭd′dl* [AS. *hridder;* Ger. *reiter;* Bret. *ridel*, a corn-sieve]: an instr. for separating grain from the chaff, or for separating larger from smaller particles; a sieve: V. to separate, as grain from the chaff, with a riddle; to make numerous holes or openings in, as with balls or shot; to make many little holes in. RID′DLING, imp. RID′DLED, pp. *-dld.*

RIDDLE, n. *rĭd′dl* [AS. *rædelse*, a dark speech—from *rædan*, to read: OHGer. *ratsal* or *radisli;* Ger. *räthsel*, a riddle: Bav. *râten;* Dan. *raade*, to divine, to imagine]: something proposed for solution by guess or conjecture; a puzzling question; an enigma; anything ambiguous or puzzling: V. to make riddles; to speak obscurely. RID′DLING, imp. RID′DLED, pp. *-dld.* RID′DLER, n. *-dlẽr*, one who speaks obscurely or ambiguously.—A *Riddle* is a paraphrastic presentation of an unmentioned subject, the design of which is to excite the reader or hearer to the discovery of the meaning hidden under a studied obscurity of expression. In the present day, the R. is a mere *jeu d'esprit*—a sort of witty pastime for idle people, and is usually in the form of Conundrum (q.v.); but anciently—and its antiquity is very great—it held far more important place, though in its inferior phase of conundrum likewise it was a part of the intellectual entertainment at Greek, and latterly at Roman banquets. Among the easterns, it naturally associated itself with their symbolical modes of thought, and was, as it still is, abundantly employed for didactic purposes. The so-called Proverbs or sayings attributed to Solomon frequently assume the form of riddles. Every reader of the Old Test. is familiar with the R. which Samson proposed to the Philistines, and the 'enigmas' (as the Septuagint has it) that the Queen of Sheba proposed to Solomon, though it is doubtful if the latter were more than hard or difficult questions plainly put. The R. is found in the Koran, and several books of riddles exist in Arabic and Persian. They seem to have been known to the ancient Egyptians, and among the Greeks they were allied in the earliest times with the *oracula*, or mystic utterances of the inspired priests, and were generally, as is the case with Samson's R., in verse; but in Greece they came into vogue about the time of the 'Seven Wise Men,' one of whom, named Kleobulos, as also his daughter Kleobuline, was celebrated for the composition of metrical riddles (*griphoi*), some of which are still remembered. Even the greater poets did not disdain to introduce the R. into their writings, or to devote whole poems to the subject—e.g., the *Syrinx*, commonly ascribed to Theocritus. Homer, according to a statement in Plutarch, died of chagrin at not being able to solve a R.; and the R. of the Sphinx (see ŒDIPUS) is probably the most celebrated in the whole circle of philosophical puzzles. Among the Romans, professional riddle-makers did not appear till the latest period of Roman literature, the reason assigned for which is

the superior gravity and earnestness of the Roman genius. Appuleius wrote a *Liber Ludicrorum et Griphorum*, but it is not extant.

The R., more perhaps as an amusement for the baronial hall on winter-nights, or for the monastic mess-room, than as a serious intellectual effort, was much cultivated in the middle ages. This character of lively or amusing puzzle it has ever since for the most part retained. Many specimens of what would now be termed 'riddle' or 'conundrum' books exist in French, English, and German collections of manuscripts, and were printed at an early period. One of these, entitled *Demands Joyous*, which may be rendered 'Amusing Questions,' was printed in English by Wynkin de Worde, 1511. Many of these 'joyous demands' are simply coarse jests; but others are really fitted to excite risibility—e.g., Demand: 'What is that that never was and never will be?' Response: 'A mouse's nest in a cat's ear.'—'What is the worst bestowed charity that one can give?' 'Alms to a blind man; for he would be glad to *see* the person hanged that gave it to him.' The Reformation, at least in Prot. countries, checked riddle-making; but in the 17th c. it began to creep into favor again. Le Père Ménestrier, learned Jesuit, wrote a grave treatise on the subject; and in France, riddles soon rivalled in popularity the madrigals and sonnets of the period. In the 18th c., the taste for riddles increased, and most of the brilliant French *littérateurs*—e.g., Boileau, Voltaire, and Rousseau—did a little in this line, until, finally, the *Mercure de France* became a fortnightly repository of riddles, the solution of which was sufficient to make a reputation in society. In Germany, Schiller gave the R. a broader development. Riddles, as a factor in the intellectual development of barbarous peoples, are interesting to students of folk-lore. See Friedrich's *Geschichte des Räthsels* (1860); Tylor's *Primitive Culture*.

RIDE, v. *rīd* [Icel. *reida*, to sway, to move up and down, as a ship at anchor; *rida*, to be borne in a ship or on a horse: Dut. *rijden*, to ride: Ger. *reiten*; Sw. *rida*; Dan. *ride;* AS. *ridan*, to ride]: to be borne or carried along, as in a carriage or on horseback; to sit on a horse, and so be carried along; to be supported in motion; to sit or rest on so as to be carried; to be at anchor, as a ship: N. an excursion on horseback or in a vehicle; a drive; the course or road passed over in riding. **Rī'ding**, imp.: Adj. employed for travelling on horseback; suitable for riding on, as a riding-horse: N. the act of one carried on a horse or in a carriage. **Rode**, pt. *rōd*, did ride. **Ridden**, pp. *rĭd'n*, been carried or borne along, as on horseback. **Rider**, n. *rī'dėr*, one who rides; one who breaks or manages horses; an addition made to a MS., etc., and inserted after its completion; anything added to strengthen; a deduction to be drawn from a mathematical theorem; in *mining*, portions

of the cheek of a vein of ore, which are mingled with masses of ore. RI′DERED, a. *-dėrd*, mingled with masses of ore. RI′DERS, n. plu. *-dėrz*, the interior ribs to strengthen and bind the parts of a ship together. RI′-DERLESS, a. *-lĕs*, without a rider. RIDING-BITTS, n. two strong upright timbers near the bows of a ship, to which the cable is secured; they extend through two decks, are connected by a cross-piece, and are braced against the strain of the cable by horizontal standards bolted to the deck beams. RIDING-HABIT, *-hăb′ĭt*, the long upper garment worn by ladies on horseback. RIDING-PART, n. a protuberance on the inner surface of the joint part of a scissors-blade, which forms the touching portion back of the rivet. RIDING-RHYME [said to be named from the riding pilgrims of the Canterbury Tales]: a metre of five accents, each accent falling on the even syllable, and having the lines in rhyming couplets. RIDING-SCHOOL, a place where the art of riding is taught. RIDING-MASTER, a teacher of the art of riding. TO RIDE ROUGH-SHOD OVER ONE, to be overbearing or oppressive; to act tyrannically.

RIDEAU, n. *rē-dō′* [F., a curtain, *a rideau*]: in *fort.*, a small elevation of earth, extending lengthwise on a plain, serving to cover a camp from the approach of an enemy, or to give other advantages to a milit. post.

RIDGE, n. *rĭj* [AS. *hrycg;* Low Ger. *rugge;* Dan. *ryg;* Ger. *rücken*, the back]: anything formed like the back of an animal; a long horizontal elevation from which the surface slopes down on each side: a strip of soil formed in plowing, consisting of a crown, two flanks, and two furrow brows, the hollow space between ridges being called the open furrow: the angular top of the roof of a building; a raised or elevated line: V. to cover with or form into ridges; to rib or wrinkle. RIDG′ING, imp. RIDGED, pp. *rĭjd.* RIDGY, a. *rĭj′ĭ*, having ridges; rising in a ridge. RIDGE′-BAND, n. that part of the harness which goes over the saddle on a horse's back, and, being fastened on both sides, supports the shafts of the cart. RIDGE′-BONE, n. the backbone. RIDGE′-POLE, n. piece of board or timber forming the ridge of a roof; a ridge-piece or ridge-plate. RIDGE′-ROPE, n. in *naut.*, a rope leading from the knight-head to the upper part of the bowsprit cap, for the safety of the men walking out upon the bowsprit in rough weather: the centre rope of an awning: a safety-line extended from gun to gun in bad weather. RIDGE-TILES, tiles forming the ridge or apex of a roof. RIDGE AND FURROW, the alternate elevations and depressions of plowed land.

RIDGEL, n. *rĭj′ĕl*, or RIDGE′LING, n. *-lĭng* [Norw. *rigla*, to rock or waver: comp. Manx, *reagh*, ruttish, wanton (see RIG 2)]: a ram imperfectly castrated, and consequently liable to excited movements under the sexual impulse.

RIDGE'TOWN: Canada, town in the County of Elgin, Province of Ontario; on the Michigan Central railroad; about 8 m. from Lake Erie and 65 m. e. of Windsor. It is in an agricultural region, and has some manufacturing interests. Pop. 2,410.

RIDGE'WOOD: N. J., village in Bergen co.; on the Erie railroad; about 22 m. n. of New York. The railroad divides the village into eastern and western sections. The village is in a residential locality; the western side is built up with fine residences, most of them the homes of men doing business in the city. The eastern section of the village spreads out into the Paramus valley, through which flows the Saddle river. In this part are substantial dwellings with extensive grounds. There are no manufactories. The business blocks and fraternal society buildings are mostly of limestone and pressed brick. There are nine churches, public schools, and one private school for boys. Located here is the House of Divine Providence for Incurable Patients, in charge of Sisters of Charity. The water supply is obtained from artesian wells. The roads in the vicinity are excellent, and the scenery in general, together with the numerous groves and small streams, make it a most charming locality. In the vicinity are many points of historic interest, their histories dating back to pre-Revolutionary days. Pop. (1900) 2,685; (1910) 5,416.

RIDGWAY, *rĭdj'wā,* ROBERT: American naturalist: b. Mount Carmel, Ill., 1850, July 2. He was zoologist to the United States geological exploration of the fortieth parallel under Clarence King in 1867-9, and since 1880 has been curator of the division of birds in the National Museum at Washington. He was one of the founders in 1883 of the American Ornithologists' Union, of which he later became president. He served as a member of the committee at the first International Ornithological Congress at Vienna in 1885, and of that at Budapest in 1891. He is author of: *A Nomenclature of Colors for Naturalists* (1886); *Manual of North American Birds* (1887); *Birds of North and Middle America* (1901-2); *A History of North American Birds* (5 vols., with Baird and Brewer); *The Ornithology of Illinois* (2 vols.); etc.

RIDGWAY: Pa., borough, capital of Elk co.; on the Clarion river, and on the Buffalo, R. & P. and the Pennsylvania railroads; about 150 m. n.e. of Pittsburg and 115 m. s.e. of Erie. It is in a region devoted mainly to lumbering and agriculture. The chief industrial establishments are lumber mills, sash, door, and blind factories, flour and grist mills, machine shops, engine and boiler works, and dry kilns. There are other manufactories whose products are mining materials, proprietary medicines, and tobacco products. The educational institutions are public and parish elementary schools, a public library, and a private business school. Pop. 5,408.

RIDICULE n. *rĭd'ĭ-kūl* [L. *ridĭc'ŭlus*, laughable, droll —from *ridērè*, to laugh: It. *ridicolo;* F. *ridicule*, ridiculous]: remarks designed to excite laughter, with some degree of contempt; mockery; satirical remarks: V. to treat with contemptuous merriment; to mock; to deride; to sneer at. RID'ICULING, imp. RID'ICULED, pp. *-kūld*. RID'ICULER, n. *-kū-lĕr*, one who ridicules. RIDICULOUS, a. *rĭ-dĭk'ū-lŭs*, exciting ridicule; laughably absurd. RIDIC'ULOUSLY, ad. *-lĭ*. RIDIC'ULOUSNESS, n. *-nĕs*, the quality of being ridiculous.—SYN. of 'ridicule, n.': mockery; banter; wit; derision; raillery; burlesque; irony; satire; sneer; jeer; sarcasm; lampoon —of 'ridiculous': droll; absurd; laughable; ludicrous preposterous; risible.

RIDING, n. *rī'dĭng* [a corruption of OE. *thrithing;* Ice. *thridjungr;* Norw. *tridjung*, a third part]: one of the three divisions into which the county of York, England, is divided, termed respectively East, West, and North R. A similar division existed in several other counties in the Anglo-Saxon period; there were the *laths* of Kent, the *rapes* of Sussex, the *parts* of Lincoln. The trithing, lath, or rape was formed of three or more hundreds, and presided over by a trithing-man or lath-grieve. In *Domesday Book*, we find Yorkshire divided, as at present, into three ridings, and sub-divided into wapentakes. See WAPENTAKE.

RIDLEY, *rĭd'lĭ*, NICHOLAS: one of the most noted leaders of the Reformation in England: about 1500–1555, Oct. 16; b. Northumberland. He was educated at the foundation-school of Newcastle-upon-Tyne, and at Pembroke Hall, Cambridge. He became a fellow of this college 1524, and ultimately president. The spirit of the Reformation had begun to penetrate the universities of Oxford and Cambridge. Tyndale and Bilney had taught the new doctrines in Cambridge; and Ridley, no less than Cranmer and Latimer, all Cambridge students about the same period, had probably caught something of their spirit. This reforming tendency was greatly strengthened in R. by a tour on the continent of Europe after completing his studies. He met some of the most active Reformers abroad, and after three years he returned with his principles firmly grounded in favor of the new course of things. He became proctor to the Univ. of Cambridge, and in this capacity protested against the claims of the papal see to supreme ecclesiastical jurisdiction in England. He was also chosen public orator, and, under the patronage of his friend Cranmer, was advanced first to be one of the king's chaplains, and 1547 nominated bp. of Rochester. He distinguished himself by vehement denunciation of the idolatrous use of images and of holy water, and soon became one of the most prominent, as he remained one of the most consistent and inflexible, supporters of the Reformed doctrines. He joined actively in the measures of Edward VI.'s reign, and on the deprivation

of Bonner, Bp. of London, Ridley became his successor, three years after his elevation to the see of Rochester. In this high position he distinguished himself by 'his moderation, his learning, and his munificence.' He earnestly promoted the Reformation, yet without bigotry or intolerance; he exerted himself in the foundation of Christ's Hospital, and of the hospitals of St. Bartholomew and St. Thomas in Southwark, the two latter of which have become eminent as schools of medicine—the former as a school of classical and general instruction. He assisted Cranmer in the preparation of the 41 articles of doctrine, afterward reduced to 39. On the death of Edward VI., he warmly espoused the unfortunate cause of Lady Jane Grey; and on its speedy failure, and the accession of Mary, his known connection with it, as well as his general activity in the cause of the Reformation, exposed him to the vengeance of the papal party, again ascendant. He was committed to the tower 1553; and in the subsequent year, when a convocation was convened at Oxford for discussion of the doctrine of transubstantiation, he was removed thither with Cranmer and Latimer, in order that he might engage in the discussion. The discussion proved a mere pretense; the Reformers were adjudged defeated and obstinate heretics, and condemned to suffer at the stake. R. was led forth to be burned, with his friend and fellow-reformer, Latimer. He suffered in front of Balliol College, cheerful, steadfast, and consistently enduring, as he had been throughout his life. He was, according to Burnet, one of the ablest of all who advanced the Reformation in England. His character was pure, elevated, and self-denying. Fox says of him, he was 'wise of counsel, deep of wit, benevolent in spirit.'

RIDOTTO, n. *rĭ-dŏt'tō* [It. *ridotto*, retreat, rendezvous —from L. *reductus*, retired—from *re*, back; *ducĕrĕ*, to lead]: among *Italians*, a favorite entertainment of music and dancing generally held on fast-eves.

RIDPATH, John Clark: educator and author: 1840, Apr. 26—1900, Aug. 1; b. Putnam co., Ind. He graduated at Asbury (now De Pauw) univ.; became instructor in Thornton Acad., and 1864 its president; was prof. in Baker Univ., Kan., 1867; prof. of English literature in Asbury Univ. 1869, and vice-pres. of that institution 1879. He was influential in securing a large endowment from Mr. De Pauw and in rechartering Asbury as De Pauw Univ., after which he resigned and applied himself to literature. Among his works are: *Academic History of the United States* (1874–5) *Popular History of the United States* (1876); *Inductive Grammar of the English Language* (1878–79); *Cyclopedia of Universal History* (1880–85); *The Great Races of Mankind* (1893); a poem *The Epic of Life* (1894); *History of the United States* (1900) largely circulated and frequently reprinted.

RIEDESEL, *rē'dĕh-zĕl,* FRIEDRICH ADOLPH, Baron VON: soldier: 1738, June 3—1800, Jan. 6; b. Lauterbach, Hesse. After studying law, he entered the army, served the British in the Seven Years' war, won distinction at the battle of Minden, and reached the rank of adjutant-general of the army of Prussia 1767. He came to America 1776, with the rank of major-general, and in command of about 4,000 Hessian and other soldiers, hired by the British to aid in subduing the colonies, rendered valuable service in Canada, at Ticonderoga, and other points; was captured at Saratoga; and after being exchanged was in command on Long Island. He returned to Germany 1783, became lieutenant-general 1787, for some time commanded the Brunswick soldiers in Holland, and for about 6 years previous to his death was in command of the city of Brunswick. His *Memoirs, Letters, and Military Journals,* 2 vols., pub. in Germany, were translated and issued in this country (1868). His wife, FREDERICA CHARLOTTE LOUISA VON RIEDESEL (1746-1808), b. Brandenburg, daughter of the Prussian minister Von Massow, was a woman of great beauty and varied accomplishments, joined her husband in Canada 1777, and was with him during the remainder of his stay in this country. She cared for the sick and wounded, and won the respect of the soldiers. Her *Letters and Journals Relating to the War of the American Revolution* were reprinted in this country (1867).

RIEL, *rē-ĕl',* LOUIS: Canadian insurgent: b. St. Boniface, Manitoba, 1844, Oct. 23; d. Regina, Northwest Territory, 1885, Nov. 16. He belonged to the Mitis race of Franco-Indians, and as protégé of Archbishop Taché, was educated at the Jesuit College at Montreal. In 1869 he took part in the protest raised by the native tribes against the establishment of Canadian authority in the territories lately acquired from the Hudson Bay Company, and was elected president of a provisional government established at Fort Garry. The rebellion was suppressed the next year by a force under Sir Garnet Wolseley and Riel fled from the territory. In 1873 he was elected to the Dominion parliament for Provencher, but was not permitted to take his seat, and after two subsequent re-elections a warrant of outlawry was issued against him and he was sentenced in 1875 to five years' banishment with forfeiture of political rights. In 1884-5 he headed a party of half-breeds in another insurrection, which was soon suppressed. Riel was taken prisoner, convicted of treason, and executed.

RIEL'S REBELLION: or the Northwest Rebellion, was an outbreak of the half-breeds and Indians of the valley of the Saskatchewan, in the spring of 1885, promptly suppressed by the Canadian militia. For some time past discontent had been rife among the half-breeds, or metis, of that district, who feared that the surveying of the country by the Dominion government and the gov-

ernment sales of land to incoming settlers would dispossess them of their homesteads. In 1884, June, Louis Riel, the half-breed leader of the abortive outbreak of 1869-70, returned by invitation from Montana and put himself at the head of the movement. At a gathering at Saint Laurent, on the Saskatchewan, 1884, Sept., a 'Bill of Rights' was adopted asking that the half-breeds should receive the same grant of 240 acres per capita that had already been given (1870) to their kinsmen in the province of Manitoba. With this demand were coupled more extravagant pretensions to further reservations of land and grants of money. Various petitions had already been sent to the Dominion government in behalf of the half-breed claims. A commission had been appointed to consider them, but the whole matter aroused so little public attention in Canada that the news of the actual revolt in 1885, Mar., came with alarming suddenness. On the 17th of that month the metis formed a provincial government, with Louis Riel (q.v.) as president, Gabriel Dumont as adjutant-general, and a numerous council. All obtainable stores were seized, supplies on the way to Prince Albert intercepted, and the telegraph wires cut. At the same time every effort was made to arouse the Indians of the Saskatchewan district, detachments of whom, under Beardy and One-Arrow, at once joined the rebels. The rebels attacked Crozier, commander of the mounted police, near Duck Lake, and forced him to retire to Carlton with a loss of 12 killed and 12 wounded. The mounted police burned the fort at Carlton and retired to Prince Albert. The news of the fight at Duck Lake occasioned intense excitement throughout Canada. Immediate steps were taken to despatch an adequate force of militia to the northwest. General Sir Frederick Middleton, the commander-in-chief, was already on his way. On the 28th of March there was a general call to arms of the militia forces, picked troops from the different regiments being at once forwarded to the front. Various corps of scouts, rangers, cavalry, etc., were specially organized. Eighteen hundred troops started from Ontario and Quebec within six days of the call to arms, and within a month 3,000 men had been transported to the northwest and 1,500 raised in Manitoba and the territories. The main body of rebels had established themselves at Batoche, on the South Saskatchewan, a river flowing from the southwest to meet its confluent on a long V-shaped angle. Mustering his forces at Qu'Appelle and Swift Current. Middleton resolved to strike into the rebel territory in two columns. The main column, under Middleton, was to move northward on Clark's Crossing, a ferry station on the Saskatchewan about 40 m. by trail from Batoche. A second, under Lieutenant Colonel Otter, was to march from Swift Current (140 m. w. of Qu'Appelle) to the relief of Battleford. A third force, gathered at Calgary, was to descend the route of the North Saskatchewan from Edmonton, thus reaching Fort Pitt.

Meantime the position of affairs appeared extremely critical. Some 500 Indians in the neighborhood of Battleford had risen under Poundmaker, a Cree chief, laid siege to the stockade fort in which the whites had taken refuge, and plundered the stores of the town. Near Fort Pitt the Indians had also risen under Big Bear, and at Frog Lake, a post about 30 m. distant, on Good Friday, they plundered the stores and shot down nine persons in cold blood. The news of the massacre spread terror throughout the unprotected valley of the upper river, the settlers fleeing toward Edmonton. Many of the deserted houses were looted and burned. The advance was carried out with admirable success. The main column, the Royal Grenadiers, A Battery and other troops, traversing in forced marches 177 miles of prairie, struck the South Saskatchewan at Clark's Crossing. Advancing northwards down the river, they came upon the rebels strongly posted in a wooded ravine called Fish creek, in which they had constructed rifle pits. The rebels, led by Gabriel Dumont, defended themselves stubbornly, but were ultimately dislodged. The loss of the militia was 10 killed and 40 wounded. The second column, under Otter, consisting chiefly of Queen's Own men, left Swift Current Apr. 13, and after a march of 202 m. successfully relieved the beleaguered fort at Battleford. From there Colonel Otter determined to strike at Poundmaker's reserve, against which he moved on May 1, with a force of 325 men and three guns. They came upon the Indians in force at Cut Knife Hill, and after a severe engagement were compelled to retire on Battleford, with a loss of 8 killed and 14 wounded. At the same time General Strange, with the third division, marched from Calgary to Edmonton, and thence directed his forces against Big Bear. Meanwhile General Middleton decided to move forward against the main body of the half-breeds at Batoche. The advanced season rendered possible the navigation of the South Saskatchewan, down which the steamer *Northcote,* with supplies and munitions, was despatched to join Middleton's column. Batoche was invested by the militia on May 9, and a four days' fight ensued. The rebels were entrenched in rifle pits along the banks of the river. During the first three days the fighting was desultory, Middleton using his artillery and throwing up earthworks in order to exhaust the ammunition of the half-breeds without unduly exposing his men. The *Northcote,* that was to have aided in the attack, steamed down the river under a hot fire on the 9th, but its steering gear being disabled, it drifted past Batoche. On the fourth day a general charge of the militia resulted in a complete victory. The rifle pits and the village of Batoche were taken by storm and Riel and many of his council captured. Dumont escaped to the United States. The loss of the Canadian forces in the four days was 8 killed and 46 wounded; that of the rebels, 51

killed and 173 wounded. With the storming of Batoche the rebellion was virtually at an end. Poundmaker capitulated, and Big Bear fleeing to the north, though offering fight at Frenchman's Butte and Loon Lake, was ultimately captured. Riel was taken to Regina, where he was tried for treason-felony. His counsel attempted to defend him on the ground of insanity, but the plea was unavailing, and he was sentenced to be hanged. Numerous petitions were sent from French Canada in favor of commutation of his sentence, with equally urgent petitions to the contrary from various parts of the Dominion. He was hanged at Regina 1885, Nov. 16, meeting his death with great fortitude. Eight Indians were shortly afterwards hanged at Battleford for complicity in the murders at Frog Lake, Fort Pitt and other places. Poundmaker, sentenced to three years' imprisonment, died in the Manitoba penitentiary.

RIEMANN, Georg Friedrich Bernhard: German mathematician: b. Breselenz, near Dannenberg, Hanover, 1826, Sept. 17; d. Salasca, Lago di Maggiore, 1866, July 20. In 1854 he became privat-docent, in 1857 extraordinary professor, and in 1859 ordinary professor of mathematics at the University of Göttingen. His collected works were published in 1876.

RIENZI, *rē-ĕn'zē*, Cola di: famous Roman tribune: 1313-1354, Oct. 8; b. Rome. His parentage was humble, his father being a tavern-keeper, named Lorenzo (by abbreviation Rienzo), and his mother a washerwoman. Until his 20th year, he lived among the peasants of Anagni; then he returned to his native city, where he studied grammar and rhetoric, read and re-read the Latin historians, philosophers, and poets (Greek was scarcely yet known in Italy); and excited his imagination, while at the same time he colored his speech, with the prophetic enthusiasm of the inspired writers. The assassination of his brother by a Roman noble, whom he found it impossible to bring to punishment, is supposed to have determined him to deliver the city from the barbarous thraldom of the barons. In 1343 he was appointed by the heads of the Guelph party spokesman of a deputation to the papal court at Avignon to beseech Clement VI. to return to Rome for protection of the citizens from their oppressors. Here he formed a close friendship with Petrarch, through whom he obtained a hearing from the pope, who appointed him notary to the city chamber. 1344, April, Rienzi returned home, and sought countenance from the magistrates in his ideas of reform; but reform, he found, was impossible without revolution. During three years, he loudly—perhaps even ostentatiously—menaced the nobles; for the enthusiasm of Rienzi, though sincere, was showy and vain. The nobles took no steps to crush him, for the reason that they thought him mad. At last, when Rienzi thought

he could rely on the support of the citizens, he summoned them together 1347, May 20; and surrounded by 100 horsemen, and in presence of the papal legate, he delivered a magnificent discourse, and proposed a series of improved laws. The laws were accepted, the aristocratic senators were driven out of the city, and R. was invested with dictatorial power. He took the title 'tribune of liberty, peace, and justice,' and chose the papal legate for his colleague, but reserved to himself the direction of affairs. The pope confirmed the eloquent dictator in his authority; all Italy rejoiced in his success. A bright dream now seems to have flashed across R.'s imagination—the unity of Italy and the supremacy of Rome. Every great Italian has dreamed that dream from Dante to Mazzini. R. dispatched messengers to the various Italian states, requesting them to send deputies to Rome to consult for the general interests of the peninsula, and to devise measures for its unification. These messengers were everywhere received with enthusiasm; and 1347, Aug. 1, in the Lateran Church, 200 deputies assembled; and R. declared that the choice of an emperor of the Holy Roman Empire belonged to the Roman people, and summoned Ludwig of Bavaria and Karl of Bohemia, disputants for the dignity, to compear before him. The step was wildly impolitic. R. had no *material* power to enable him to give efficacy to his splendid assumption; the pope was indignant at the transference of authority from himself to his subjects; and the barons, taking advantage of certain ceremonial extravagances which the dictator had committed, and which had diminished the popular regard for him, gathered their forces, and renewed their devastations. After ineffectual resistance, R. resigned his functions, weeping all the while, and withdrew from Rome, which was entered by the barons two days after. His tenure of power had lasted only seven months. In the solitudes of the Neapolitan Apennines, R. seems to have recovered his enthusiasm and his faith. Regarding his fall as a just chastisement of God for his love of worldly vanities, he joined an order of Franciscan hermits, and spent nearly two years in exercises of piety and penitence—all the while, however, cherishing the hope that he would one day 'deliver' Rome again. This ambition to play a distinguished part made him readily listen to a brother-monk, who, about the middle of 1350, declared that, according to the prophecies of Joachim of Flores, of Cyrillus, and of Merlin, R. was destined, by the help of Emperor Karl IV., to introduce a new era of happiness into the world. R. betook himself at once to Prague, and announced to the emperor that in a year and a half a new hierarchy would be established in the church, and under a new pope. Karl would reign in the West, and R. in the East. Karl, not knowing what to say in reply to such language, thought it safest to put the 'prophet' in prison, and then wrote to report the matter to his friend the pope. 1351, July, R. was transferred to

Avignon, where proceedings were opened against him in reference to his exercise of tribunitial power. He was condemned to death, but his life was spared at the earnest entreaties of Petrarch and others; and the next two years were spent in an easy confinement in the French papal city. Meanwhile affairs at Rome had become worse than ever: the great families were even more factious, more anarchical, more desperately fond of spilling blood than formerly; and at last Innocent VI. sent Cardinal Athornoz to re-establish order. R. was also released from prison, and accompanied the cardinal. A residence was assigned him at Perugia; but 1354, Aug., having borrowed money, and raised a small body of soldiers, he made a sort of triumphal entry into Rome, and was received with universal acclamations. But his character, never of strong and consistent fibre, showed impairment and debasement; he abandoned himself to sumptuous living, and his once generous sentiments had given place to a hard, mistrustful, and cruel disposition. The barons refused to recognize his government, and fortified themselves in their castles. The war against them necessitated the contraction of heavy expenses; the people grumbled; R. only grew more severe and capricious in his exactions and punishments. In two months his rule had become intolerable, and an infuriated crowd surrounded him in the capitol, and put him to death with ferocious indignities.

RIESENGEBIRGE, *rē′zėn-gėh-bĭrch′ėh* (giant mountains): mountain range about 23 m. long by about 12 m. broad, between Bohemia and Prussian Silesia: see BOHEMIA.

RIESI, *rē-ā′zē:* town of Sicily, province of Caltanisetta, and 13 m. s. from Caltanisetta, at the base of a mountain of the same name, not far from the left bank of the Salso. There are sulphur mines in the mountain.—Pop. about 12,000.

RIETI, *rē-ā′tē* (ancient, *Reate*): city of central Italy, province of Perugia in Umbria, at the foot of a hill, on the banks of the Velino, 45 m. n.e. of Rome. It is walled, its streets are regular, it has a fine cathedral and many benevolent institutions, and is the seat of an archbishop. R. was a noted city of the Sabines.—Pop. 12,900.

RIEVER, or REIVER, n, *rēv′ėr* [Scot.]: a robber; a moss-trooper.

RIFACIMENTO, n. *rē-fâ-chē-mĕn′tō* [It.]: a remaking or re-establishing; specifically applied to the process of recasting literary works so as to adapt them to changed circumstances.

RIFE, a. *rīf* [Ger. *reif*, mature: O. Dut. *rijf*, copious: Icel. *rifr*, liberal; *rifka*, to increase]: prevalent, used of epidemic diseases; abounding; plentiful. RIFE′LY, ad *-lĭ.* RIFE′NESS, n. *-nĕs*, abundance; prevalence.

RIFF, *rĭf*, THE : portion of the coast of Morocco from Tangier on the w. to near the w. frontier of Algiers, about 210 m. long, 58 broad. The name, in the Berber language, which is that of the inhabitants, signifies a mountainous and rugged coast. The Riff Mountains, near and parallel to the coast, are green and wooded, and are here and there intersected transversely by fertile valleys or deep ravines, each with its brook or rivulet descending to the Mediterranean. The R. region is separated from the parallel mountain chain s. of it by an extensive, fertile, and well-watered plain, in which stands the city of Fez. The inhabitants of the R. are almost wholly Berbers, employed in feeding and breeding cattle, in fishing, and occasional piracy. On account of the injuries inflicted by their piracies on merchant vessels, most of the maritime states of Europe agreed to pay an annual sum as quit-money. When, 1828, Austria declined further payment of the tax, a Venetian vessel was seized by the Riffians in the harbor of Rabat ; but the arrival of an Austrian fleet off the port produced restitution of the ship and its cargo, as well as formal renunciation of all further claims. France followed the same course by declaring war against the sultan of Morocco, and obtained compensation 1844, after which period piracy diminished. See MOROCCO. The sultan had always discountenanced piracy, but his authority in the R. was too weak to compel obedience.

RIFFLE, n. *rĭf'l* [Ger. *riffeln*, to groove] : an inclined trough or chute down which auriferous slime or sand is conducted in a gentle stream broken by occasional slats, or by depressions containing mercury, which arrests the gold.

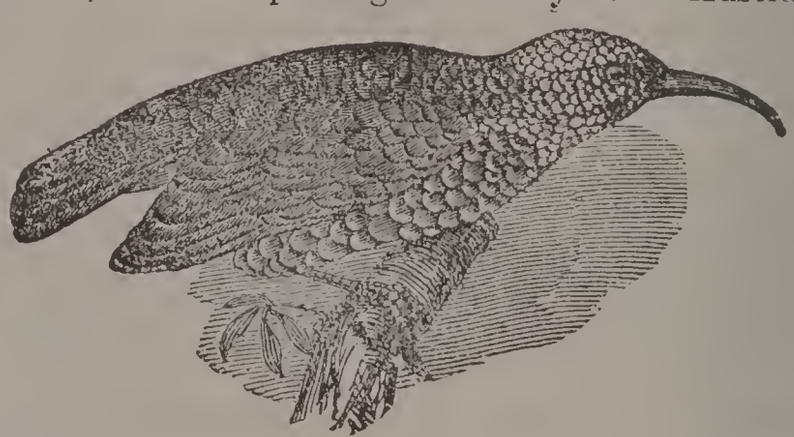
RIFFLER, n. *rĭf′lėr* [Ger. *riffel-feile*] : a file with a side so convex as to operate in shallow depressions; used by sculptors, carvers, and gun-stockers.

RIFFRAFF, n. *rĭf′răf* [*rif*, and *raff*: OF. *rif-ni-raf*, of everything, every atom: It. *raffola-ruffola*, by hook or by crook (see also RAFF)] : refuse and sweepings; dregs; scum of anything, as of society; the rabble.

RIFLE, v. *rī′fl* [OF. *rifler*, to ransack: Icel. *hrifa*, to catch: Dut. *rijfelen*, to scrape: It. *raffa*, a rifling: AS. *reafian*, to rob, to spoil] : to ransack; to sweep away; to pillage; to plunder. RI′FLING, imp. RI′FLED, pp. *-fld*. RI′FLER, n. *-flėr*, a robber.

RIFLE, n. *rī′fl* [Low Ger. *rifeln*, to streak, to furrow: Dan. *rifle*, to groove a column: Ger. *riefe*, a furrow; *riefen*, to rifle] : musket or other gun, the inside of the barrel of which is grooved or formed with spiral channels to make the bullet revolve (see RIFLED ARMS): V. to channel or groove. RI′FLING, imp. RI′FLED, pp. *-fld*. RI′FLEMEN, n. *-fl-mĕn*, body usually of sharpshooters or light infantry armed with rifles—called by the French *tirailleurs*; but the name has nearly lost meaning, as nearly all infantry are now riflemen. RIFLE-GREEN, n. a very dark green, verging on black. RIFLE-PITS, in *mil.*, holes or short trenches, about 4 ft. long and 3 ft. deep, forming, with the earth thrown out of them, cover for two men.

RI′FLE-BIRD (*Ptiloris Paradiseus*) : bird of the family *Upupidæ*, with long curved bill, and in size about equal to a large pigeon. It inhabits s.e. Australia, and is found only in very thick 'bush.' The male is regarded as more splendid in plumage than any other Australian



Rifle-bird (*Ptiloris Paradiseus*).

bird. The upper parts are velvety black, tinged with purple; the under parts velvety black, diversified with olive-green. The crown of the head and the throat are covered with innumerable little specks of emerald green of brilliant lustre. The tail is black, the two central feathers rich metallic green.

RI′FLED ARMS: fire-arms with one or more spiral grooves along the interior of the barrel; invented to remedy certain defects essentially connected with cylindrical smooth-bore guns. These defects, due chiefly to atmospheric resistance, show themselves in the erratic motion of the ball, especially when fired at long range, and arise from the following causes: *First*, The ball never fits tightly; in consequence its centre is below the centre of the bore, and a portion of the explosive force of the powder escapes over the top of the bullet, and is not only wasted, but exercises a downward pressure on the ball, tending to squeeze it *into* the under side of the barrel; and so great is this pressure, that in guns of soft metal, as brass, a perceptible dint is produced after a few rounds. Another and more important consequence of the looseness of the ball is, that the action of the powder on it is necessarily irregular, and its resulting motion along the barrel is a series of oblique impacts, now against one side, now against the other, and the direction of its motion after expulsion is necessarily not in line with the axis of the barrel, and depends on the side of the barrel with which it was last in contact. *Secondly*, Balls can never be perfectly homogeneous, and the violent and sudden pressure of the exploded powder produces a slight change of shape; consequently, the centre of gravity can never accurately coincide with the centre of the sphere, the air resists its forward motion unequally, and true flight is precluded. *Thirdly*, As a consequence of the friction of the ball against the sides of the barrel, it acquires a rotatory motion, the direction of its rotation after expulsion being determined by the particular point of the muzzle with which it was last in contact. Thus, if it finally touched the top or bottom of the muzzle, the plane of rotation of the anterior surface of the ball would be in line with its progressive motion, and the rotation would be in an upward or downward direction; if it last rebounded from the right side, the plane of rotation would be in line with its path, and the rotation of the anterior surface from left to right, and so on. The ball, in its rapid flight, compresses the air in front, and produces a vacuum behind; the denser, because more compressed, air in front attempts to rush round the sides of the ball to fill up the vacuum. Now (see fig. 1), let us suppose that the ball, while in rapid advance, is also revolving in a horizontal plane, and from left to right; the side A. whose rotation *conspires with* the

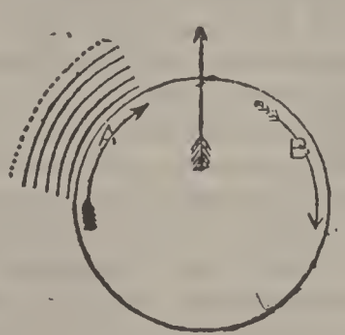


Fig. 1.

Horizontal section of a spherical bullet, the straight arrow showing the direction of its forward motion or *motion of translation*, and the curved arrows that of its motion of rotation. The ball, in this instance, is supposed to have struck against the *right* side of the muzzle.

motion of translation, resists, by its friction, the attempt of the air to reach the vacuum by that side; while the side B, whose rotation is against the motion of translation, conspires to aid the air in reaching the vacuum. It follows from this, that the air is denser in front of A than in front of B; its resistance on the side A is greater than that on B, and the ball, in consequence, is deflected toward the side on which the resistance is least (toward the right in this instance). If the ball struck the top of the muzzle, its revolution would be in a vertical plane in line with the barrel, and in an upward direction, under which circumstances the ball would tend, first, downward from the first reason, and then upward from the third; while, if it struck the bottom of the muzzle, the contrary would be the case. It occurred to artillerists that these aberrations of the ball from its true theoretical path could best be counteracted by securing that the plane of rotation of the ball should be at right angles to its motion of translation; as the irregularities in its structure, which produce aberrations of the first and second kind, would thus act equally in all directions, producing an exact counterbalance, while the aberration from the ball's rotation would wholly disappear; and the constancy of the vertical transverse position of the plane of the ball's rotation was obtained by making one or more spiral grooves along the interior of the barrel.

As early as 1498, the citizens of Leipzig possessed the germ of the future rifle, for their arms had a grooved bore, but the grooves were straight. In 1520 Augustin Kutter (or Koster) of Nürnberg was noted for his rose or star-grooved barrels, in which the grooves had a spiral form. It took its name from the rose-like shape of the bore at the muzzle; and, setting aside superiority of workmanship subsequently developed, Kutter's arm was the veritable rifle: to him, therefore, so far as history shows, is due the invention of this terrible weapon, which reduces the flight of the projectile to a question of the individual skill of the marksman. The spiral groove gives to the bullet, if it fits into the grooves, a rotation rapid in proportion to the force of the explosion and the sharpness of the twist in the spiral. This revolution of the bullet on its own axis keeps that axis, gravity excepted, in the line in which it leaves the piece. In 1628 Arnold Rotsiphen patented a new way of 'makeing gonnes,' which, from a subsequent patent granted him 1635, appears to have consisted, among other improvements, in rifling the barrels. It would be tedious to enumerate the various principles of rifling which were tried during the two centuries following Rotsiphen: suffice it to say, that scarcely a form of rifling now prevails but had its prototype among the old inventions. The difficulty of mechanical appliances making the rifling true, however, deferred their general introduction, and the cost of rifled arms limited their use to the purposes of the chase. The revolutionary government of France

had rifles issued to portions of their troops, but they met with so little success that Napoleon recalled them soon after he came to power. In the Peninsula, however, picked companies of sharpshooters, both English and French, used rifles with deadly effect. During the war with England, 1812–14, the Americans demonstrated incontestably the value of rifles in warfare; yet many years were to elapse before they were definitively placed in the hands of soldiers, many of those of every nation in the Crimean war having fought with the ineffective and almost ridiculous 'Brown Bess.' Soon after the French invaded Algeria, they had armed the Chasseurs d'Orleans with rifles, to counteract the superior range of the Arab guns. The inutility of the old musket was shown in a battle during the Kafir war, where the British discharged 80,000 cartridges, and the loss of the enemy was only 25 men struck. After experiments with the old musket, it was found that its aim had no certainty whatever beyond 100 yards. It was soon discovered that a spherical ball was not the best missile; one flying truer in which the longer axis coincided with the axis of the gun—the relative length of the axis and the shape of the head being matters of dispute. The first war-rifle was that of Capt. Delvigné, proposed 1826, and adopted for a few men in the French army; but this still included the old and rude plan of forcing the leaden ball through the grooves by blows of the ramrod. On this arm various improvements were made, till it was superseded by using with a grooved barrel the Minié bullet, which, being made smaller than the bore of the piece, could be almost dropped into the barrel. It was of lead, and in its base it contained a conical recess, to receive the apex of a smaller iron cup. The force of the explosion drove this cup into the bullet, causing the lead to expand into the grooves of the barrel. (It is right to add that this contrivance is claimed for a Mr. Greener as early as 1836.) The Prussians, meanwhile, had armed their troops with the needle-rifle (*Zündnadelgewehr*), now superseded by the *Mauser*. In England no improvement took place until 1851, when 28,000 rifled muskets to fire the Minié bullet were ordered. Notwithstanding the many advantages of the Minié system, it was found defective in practice. Experiments in all directions resulted 1853 in the Enfield rifle, which had three grooves, taking one complete turn in 78 inches, and fired a bullet resembling the Minié, except that a wooden plug was substituted for the iron cup: 1853–65, this was the weapon of the British army. In 1865 the adoption of Breech-loading Guns (q.v.) caused the Enfield to be converted into a breech-loader by fitting the 'Snider' breech mechanism to the Enfield barrel.

This arrangement was, however, only temporary, and after a most exhaustive series of trials, before a special committee on breech-loading rifles (including 104 different kinds), the Henry barrel was adopted 1871 in conjunction with the Martini breech for the new small-bore

rifle for the British army, known as the Martini-Henry rifle. The Henry system of rifling is the invention of Alexander Henry, gunmaker, Edinburgh, and its essential peculiarity consists in the form of the rifled bore.

Fig. 2.

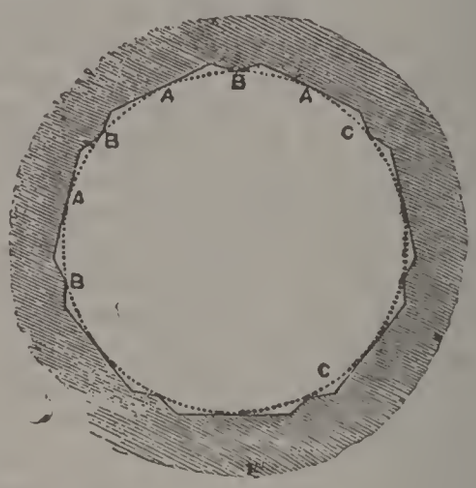


Fig. 3.

Figs. 2 and 3 represent an end section of a barrel rifled on this system. The rifling forms 7 plane surfaces A (fig. 3), and the periphery of the projectile, indicated by the dotted circle C, touches the planes A, at the centre. In addition to the bearing surfaces thus obtained, there are 7 angular projections B, which extend inward from the planes A, so that the apex of each of the projections B is concentric with the centre of the surfaces of its contiguous planes A. These angular ridges fill to a great extent the spaces between the angles of the planes A and the periphery of the projectile, thus reducing the windage, and from their peculiar construction facilitating expansion of the bullet to the major diameter of the bore, so that the rotatory or spiral motion of the projectile is obtained with greater certainty; at the same time, the figure of the projectile is so little altered that it traverses the air with less resistance, consequ ntly with more accurate flight.

The length of the Henry barrel is $32\frac{1}{2}$ inches. The mean diameter of the bore is ·450 of an inch, and the rifling takes one complete turn in 22 inches. Its bullet is solid, with a slight cavity in the rear, and weighs 480 grains, the charge of powder being 85 grains. The range, accuracy, and penetration of the 'Henry' barrel is nearly twice that of the Enfield-Snider barrel, while the highest point of its trajectory at 500 yards is 2 ft. lower, or 9 ft. as compared with 11 ft. The maximum range of the Henry barrel is about 3,200 yards at an angle of 28° 15′. The Springfield breech-loading rifle, for many years the U. S. army regulation rifle, is of ·45-inch calibre, and fires a 400-grain bullet with 70 grains of powder. It is noticeable for its great simplicity of construction, and has proved an excellent weapon, though now distinctly of an old school.

The term magazine arms or repeating arms is applied

to firearms which contain, or have attached to them, a case, holding 4 to 10 (and more) cartridges, which, being in connection with the lock action of the weapon, supplies a reserve of ammunition for rapid firing in emergency; the arm is also capable of being used as a 'single-loader' on ordinary occasions. The idea is an old one, the first practical application of which was the revolver, if we except certain ancient flint-lock weapons. The best-known systems at the present time are the Spencer, Winchester, Vetterli, Krag, Kropatchek, Burton, Hotchkiss, Green, Jarman, Mauser, Lebel, and Mannlicher. All the great powers are adopting some form of magazine rifle for army and navy.

At the present time a revolution in firearms has taken place among all the military powers. The old rifles ranging in calibre from ·45 to ·55 inch have been discarded in favor of small-bore rifles. The present calibre averages a little over ·30 inch, and the bullet is made very long to give it sufficient weight. The powder chamber is drilled out to an extra size, and the metallic cartridge fits it accurately. The bullet in many instances is cased with copper or German silver to increase its power of penetration. With these guns very high initial velocity is attained, giving a low trajectory and great range. A bullet fired from a rifle retains throughout its flight the original angle at which it left the piece. Hence at a high elevation these elongated projectiles, striking almost side-on, would make very bad wounds. But as the high initial velocity insures a low trajectory, it is believed that the new pieces, while more efficient, will be more merciful than their predecessors, and will produce a larger proportion of wounded men in proportion to the killed.

The introduction of Smokeless Powder (q.v.) is a necessary sequence of the use of rapid-firing magazine rifles. The military rifle of to-day is a magazine gun. In some—e.g., the Mannlicher—the magazine is necessary to the use of the piece. In others it can be used or not, as desired. But rapid firing is the feature of modern practice, and was rendered comparatively ineffective with the old powder by the clouds of smoke produced in a minute's firing.

As a typical modern military rifle, the new Austrian weapon, the Mannlicher, may be cited. The empty gun weighs 8·3 lbs. Its calibre is ·32 inch. The cartridges are centre-firing. They are issued in sets of five, contained in a sheet-iron case, which is readily slipped into place below the breech of the barrel. In this case they lie horizontally one on top of another, and are inserted, and the gun is then to be fired as a magazine rifle. When the last of the five cartridges enters the breech, the empty case drops out, and is left on the ground as valueless. The soldier next inserts a new case, the operation being as quick and simple as loading a common breech-loader with a single cartridge. The powder used is smokeless, and the ball of lead is cased with German

silver. The barrel of the rifle is surrounded with a steel jacket to protect the hand of the soldier from excessive heat. The initial velocity is 2,033 ft. ; maximum range, 9,185 ft ; maximum range for which the sights are adjusted, 6,725 ft. At 100 yards the ball pierces 32 inches of fir-wood and 36 inches of sand ; at 200 yards 17 inches of fir and 20 of sand ; at 1,800 yards it pierces 2 inches of fir. The soldier is supposed to carry 150 of the cartridges with him, and wagons containing a further supply of 100 cartridges per man are to accompany the troops in action. In the United States experiments led to an official report (1893) favoring the Krag-Jorgkensen rifle, instead of the Springfield, for the army. Some inspectors, however, reported (1895) several serious defects in the new gun.

Cannon were rifled as early as 1615. In 1661 the Prussians experimented with a gun rifled in 13 shallow bores. Thereafter many attempts were made to rifle cannon, with more or less success. In recent years inventors have produced many admirable guns—the great diffieulty of the day being to decide which is most effeetual. The first point was the metal; and here cast-iron was found useless, being ineapable of resisting the explosion of the large eharges neeessary to force closely fitting projeetiles through rifled barrels. Several plans were resorted to. Sir William Armstrong welds coils of wrought-iron round a mandrel into one homogeneous mass of extraordinary tenacity, which he again strengthens by similar rings round the breech. Whitworth forces rings of wrought-iron over the barrel by hydraulic pressure. The Woolwich system is to shrink coils of wrought-iron over an inner tube of mild steel toughened in oil; and it gives entire satisfaetion. The Freneh rifle brass guns, and use small eharges; having also guns of wrought-iron. The Austrians have made a new bronze alloy (invention of Gen. Von Uchatius) which has proved extremely strong; the Belgians have tried Bessemer's steel. The system of rifling was the next important matter. Lancaster adhered to his oval bore; Sir William Armstrong produced a bore rifled in a great number of small sharp grooves (this gun was adopted by the British govt. 1859); Whitworth retained a hexagonal bore; and the Freneh govt. adopted a bore with two, subsequently three, rather deep spiral grooves. After careful experiments, the Austrian, Spanish, Dutch, and Italian govts. have eoneurred in the French system. These several bores are shown below in section. In the Armstrong, rotation is eommunicated to the projectile by the latter being cased with lead, which the explosion forces into the grooves. The numerous fine grooves impart a very eorreet eentring to the shot, and give extreme aeeuracy of range; but they render the gun a delieate weapon. In the Whitworth, the shot is constructed to pass freely through the spiral hexagonal bore, windage being prevented by a greased wad. Lan-

caster's shot was elliptical, to correspond with the bore. The French projectiles have ribs or studs of projecting metal to correspond to the grooves.

The Armstrong gun has been superseded in the British service by the Woolwich gun, which has a modified form of the French rifling, but generally with a larger number of grooves (32 or 33), according to size of gun.

Fig. 4.
(The Ellipse of the bore in the Lancaster is exaggerated to show the principle.)

In the United States much attention has been given by the govt. since 1884 to the improvement of R. A., chiefly by reason of the determination to create a new and more effective navy. For a variety of reasons the principle has been officially accepted that the best means of protecting the large cities along the coasts is the provision of new types of battle-ships and of special harbor defense vessels; and as congress ordered the construction of great coast-line battle-ships, at a cost of $4,000,000 each exclusive of armor and armament, and several protected cruisers and armored coast defense vessels, as a beginning, more attention has been given to providing improved R. A. for the navy than for land defenses. The most effective 'all round' gun at the present time, appears to be the 8-inch breech-loading rifle, firing a projectile weighing 250 pounds, with a velocity of 2,334 feet per second, and capable of discharging six aimed shots per minute. Of guns embodying novel features, that invented by Capt. Zalinski, of the United States Army, appears to be the pioneer of large pneumatic ordnance. In the larger form, it consisted of a smooth-bore tube about 50 feet long, and of 15 inches calibre. By the propelling agency of compressed air, used in the gun at a pressure of 1,000 pounds to the square inch, it was capable of throwing

a projectile containing 100 pounds of high explosives, such as dynamite or nitro-glycerine, to a distance of about 5,000 yards. It was designed for coast-defense purposes, but has also been used at sea. The U. S. cruiser Vesuvius, equipped with three tubes, was employed at Santiago during the Spanish-American war, but did not attain the success anticipated. The Sims-Dudley, another form of pneumatic gun also used about that time, appears to have been a little more successful. It throws a much smaller projectile, containing about four pounds of high explosives, by air compressed by explosions of gunpowder in an auxiliary barrel located under the main tube. The Gathmann gun, another type of ordnance designed to throw projectiles containing large quantities of high explosives, appears as yet to be in the experimental stage of construction, while as a matter of fact, the development of pneumatic guns in general, up to the point of a permanent place in armaments, is extremely problematical.

Bibliography.—For more specific information on ordnance matters, the following named publications are recommended: *Journal of the United States Artillery* (Fortress Monroe, Va.); Holley, *Ordnance and Armor;* Ingersoll, *Text-book of Ordance and Gunnery; Annual Reports of the Chief of Ordnance* (U. S. Army and Navy); Bruff, *Ordnance and Gunnery;* Greener, *Modern Breech-loaders, and Chokebore Guns; Text-books on ordnance, ammunition, and gun carriages,* published by the English War Office; *Revue d'Artillerie* (Paris, monthly); *Mittheilungen über Gegenstände des Artillerie und Genie-Wesens* (Vienna, monthly); *Revue de l'Armée belge* (Brussels, monthly).

See also BREECH-LOADING GUNS: CANNON FOUNDING: FIREARMS: GATLING GUN: GUNNERY: GUN-POWDER: KRUPP'S STEEL: MACHINE GUN: REVOLVER: PROJECTILES: RANGE: WINDAGE.

RIFT, n. *rĭft* [from RIVE, which see]: a fissure or cleft; an opening made by splitting: V. to cleave; to split; to burst open. RIFT'ING, imp. RIFT'ED, pp.

RIG, v. *rĭg* [Norw. *rigga*, to bandage, to rig a vessel; *rigg*, rigging of a ship: AS. *wrihan*, to cover, to clothe]: to fit with tackling; to furnish with gear: to clothe; to dress: N. the peculiar manner of fitting the shrouds, stays, braces, etc., to their respective masts and yards in a ship. RIG'GING, imp.: N. all the cordage belonging to the masts, yards, or other parts of a ship (see below). RIGGED, pp. *rĭgd*. RIG'GER, n. *-ẽr*, one who rigs; a wheel with a flat or slightly curved rim, moved by a leather band. TO RIG A SHIP, to fit the shrouds, stays, braces, etc., to their proper masts and yards.

RIG, n. *rĭg* [Norw. *rugga* or *rigla*, to rock or waver—probably from the excited movements of animals under the sexual impulse: Dut. *wrikken*, to move to and fro: comp. Manx, *reagh*, wanton, sportive (see RIDGEL)]: an excited and irregular movement of any kind; a trick; in *OE.*, a wanton; a romping girl. TO RIG ABOUT, to be wanton; to romp. RIG'GISH, a. wanton. TO RUN A RIG, to act in an excited manner; to do something outrageous. TO RIG THE MARKET, *literally*, to play tricks with it—a term applied to a dishonest combination among a number of merchants to buy up so extensively any particular article or commodity as to be able to resell the same at greatly enhanced prices.

RIG, n. *rĭg* [AS. *hrycg*; Icel. *hryggr*; Dan. *ryg*, the back (see RIDGE)]: in *Scot.*, the back of an animal; anything formed like the back of an animal; a long breadth of cultivated land sloping down on each side; a ridge. RIG AND FUR, said of stockings which are ribbed.

RIGA, *rē'gâ*: city, cap. of the Russian govt. of Livonia, and next to St. Petersburg the most important Baltic seaport. It is on the right bank of the Dwina, crossed here by a bridge of boats and a new railway bridge 10 m. from the mouth of the river at Dünaburgon on the Gulf of Riga, at which point a fortress defends the Dwina. Ships come up to Riga. R. has ample railway connections with most parts of Russia and Germany. It was till of late defended by walls and bastions: these are now removed; and the city proper is separated from its three suburbs by promenades on both sides of the encircling canal. A citadel stands n. of the city. The chief buildings are the cathedral, the church of St. Peter, the town-hall, and the ancient castle; also the modern bourse, theatre, asylums, hospitals, and schools. Of more than a dozen stone churches, 7 are Lutheran, 4 Russian, 1 Anglican; and there are 10 wooden ones besides. R. has numerous official, literary, educational, and beneficent institutions. Its manufactures are mainly of cotton, machines, tobacco, starch, soap, candles, leather; and its large exports are chiefly flax, hemp, grain, linseed, and wood. Half of the people are Germans; and of the remainder, half are Russians and half

are Lithuanians. Pop. with suburbs (1867) 102,590; (1880) 168,850; (1890) 180,278; (1900) 282,943.

Riga was founded in the beginning of the 13th century by Albert Buckshoevden, Bishop of Livonia, and soon became a first-rate commercial town, and member of the Hanseatic League. The Teutonic Knights possessed it in the 16th century. In 1621, Riga was taken by Gustavus Adolphus, and held under Swedish dominion till 1710, but was finally annexed to Russia 1721.

RI'GA, GULF OF: inlet in the n.e. of the Baltic Sea, washing the shores of the three Baltic provinces, Courland, Livonia, and Esthonia. It is more than 100 m. long from north to south, and about 70 miles wide. The islands of Oesel, Dagö, Mohn, and Worms stand in the entrance to it, and narrow the mouth of the gulf to about 20 miles. The chief river flowing into the gulf is the Dwina. Sandbanks render navigation in some parts dangerous.

RIGA BALSAM, n. *rī'ga* or *rē'- bawl'sam:* balsam obtained from *Styrax benzoin.*

RIGADOON, n. *rĭg-a-dôn'* [F. *rigadon, rigaudon*—a dance said to be so called from *Rigaud,* the surname of its inventor]: a lively dance performed by one couple.

RIGAUD, *rē-gō,* HYACINTHE: French painter: b. Perpignan, July 20, 1659; d. Paris, Dec. 27, 1743. He arrived at Paris in 1681 and, acting under the advice of Lebrun, began to study portrait painting, taking Van Dyck for his model. In 1700 he became a member of the Academy, of which he was elected professor in 1710 and rector in 1733. His portraits are all extraordinarily successful as likenesses, his heads are full of character, and the figures have all the studied nobleness in attitude characteristic of the times; while he paints the gay costumes of the court with remarkable truthfulness and brilliancy. Among his most notable works in the Louvre are the large portraits of Louis XIV. and Bossuet.

RIG'DON, SIDNEY. See MORMONS.

RIGEL, n. *rī'jĕl* [Ar. *rijil,* a person's foot]: in *astron.,* a star of the first magnitude at the left foot of Orion; called also β Orionis. It is of bluish color.

RIGESCENT, a. *rĭ-jĕs'sĕnt* [L. *riges'cens* or *rigesen'tem,* growing stiff or numb; *riges'co,* I grow stiff—from *rigērĕ,* to be stiff]: in bot., having a rigid or stiff consistence.

RIGG, JAMES HARRISON: English Wesleyan clergyman and educator: b. Newcastle-on-Tyne, 1821, Jan. 16. He was a member of the London school board 1870-6; principal of the Westminster Training College 1868-1903; and a member of the Royal Commission on Education 1886-8. He edited the *Quarterly Review* for 15 years and wrote: *Principles of Wesleyan Methodism* (1850-1); *Scenes and Studies in the Ministry of Our Lord* (1902); etc.

RIG'GING, in a Ship: combination of numerous ropes to afford stability to the masts, and to lower and hoist the sails. Notwithstanding the complication which the cordage of a rigged ship presents at first sight to the eye, the arrangement is remarkably simple. In all substantial points, the rig of each mast is the same; to understand one is, consequently, to understand all. In the accompanying diagrams, the same notation is observed throughout, spars being shown by capital letters; sails, by italic letters; *standing* rigging, by Roman numerals; and *running* rigging, by Arabic numerals. To avoid a confusing number of symbols and needless repetition, the corresponding ropes, etc., on each mast bear the same numbers, and in the key, the name of such rope *per se* is only given. To find the full title of a rope, it is necessary to prefix (unless it pertain to the bow-sprit or gaff) the name of the mast (mizzen, main, or fore) to which it belongs. For example, the spars marked D are, counting from the left, i.e., the stern, called respectively mizzen-royal-mast, main-royal-mast, and fore-royal-mast; the standing-ropes marked IV., are the mizzen-stay, main-stay, and fore-stay, and the running-ropes bearing the figure 5, are mizzen-braces, main-braces, and fore-braces.

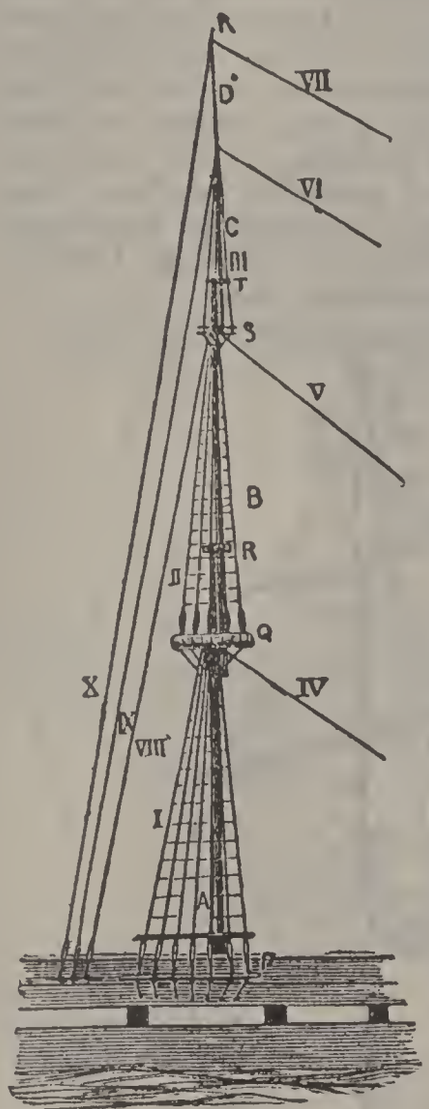


Fig. 1.

Rigging is either *Standing* or *Running*. The former is employed in maintaining, in fixed position, the masts and bow-sprit; the latter runs freely through numerous blocks, and its functions are to raise and lower the upper masts and the yards, to trim the sails, to hoist the signals and other flags, and occasionally to furl the sails.

Each mast has the following standing rigging: at each side *shrouds* (I., II., III.), consisting of several very thick (usually plaited) ropes; in front, the *stay* (IV., V., VI., VII.); and behind, the *backstays* (VIII., IX., X.), coming down to the ship's sides behind the shrouds. Across the lower-mast and topmast shrouds, thin ropes, called ratlings, are hitched horizontally, and form convenient ladders for the men in going aloft. The standing rigging of the

lower mast reaches the chains on the ship's sides; while the shrouds of the topmast and topgallantmast are worked into the top, their stays to the tops of the masts nearer the bow in each case (the bowsprit serving as an anterior mast for the fore-rigging); all the backstays, however, are brought down to the ship's sides. In steamers, the mainstays require modification to avoid the funnel; they are often adjusted on a plan similar to that of the backstays. The standing rigging of the bowsprit consists of the bobstays (XIV.), generally of chain; the martingale stays (XI., XII.), and martingale backstays (XIII.), which all exert an adverse pressure to that of the stays from the foremast, topmast, etc.

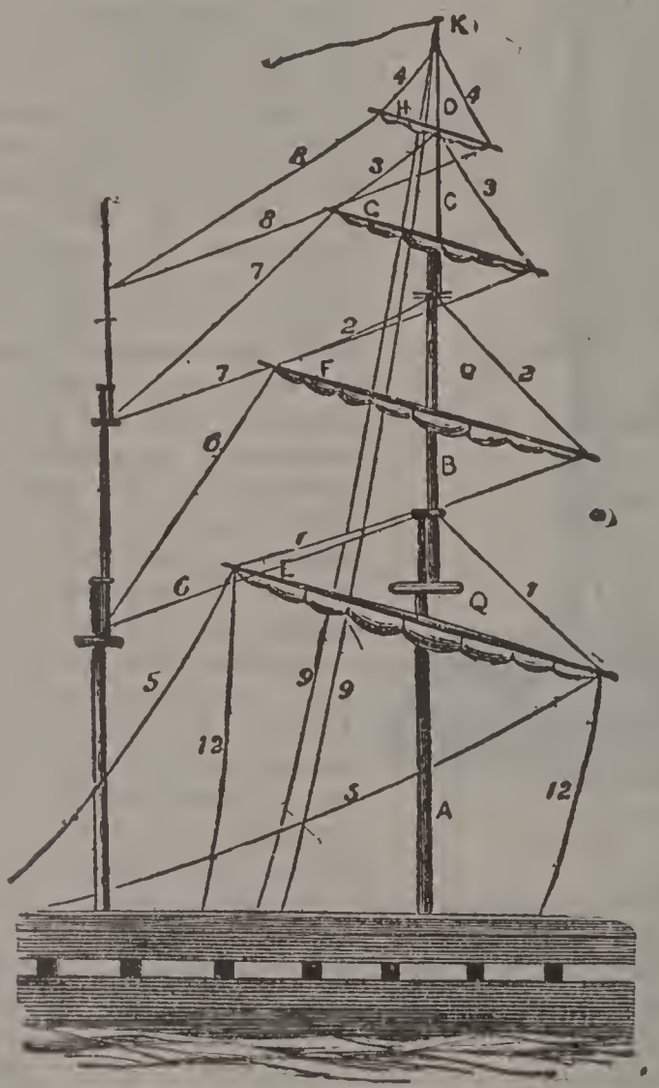


Fig. 2.

The *running* rigging is of four classes: 1. Lifts for the upper masts and the jib-boom; these are not shown in the diagrams, from the fact that they run parallel, and contiguous to the masts, topmasts, and bowsprit.

2. The lifts for the yards and sails. Each yard has two lifts, one proceeding from a point near either extremity, and passing through a pulley at the head of that section of the mast to which the sail or yard belongs. They are worked either on the deck or in the top. The

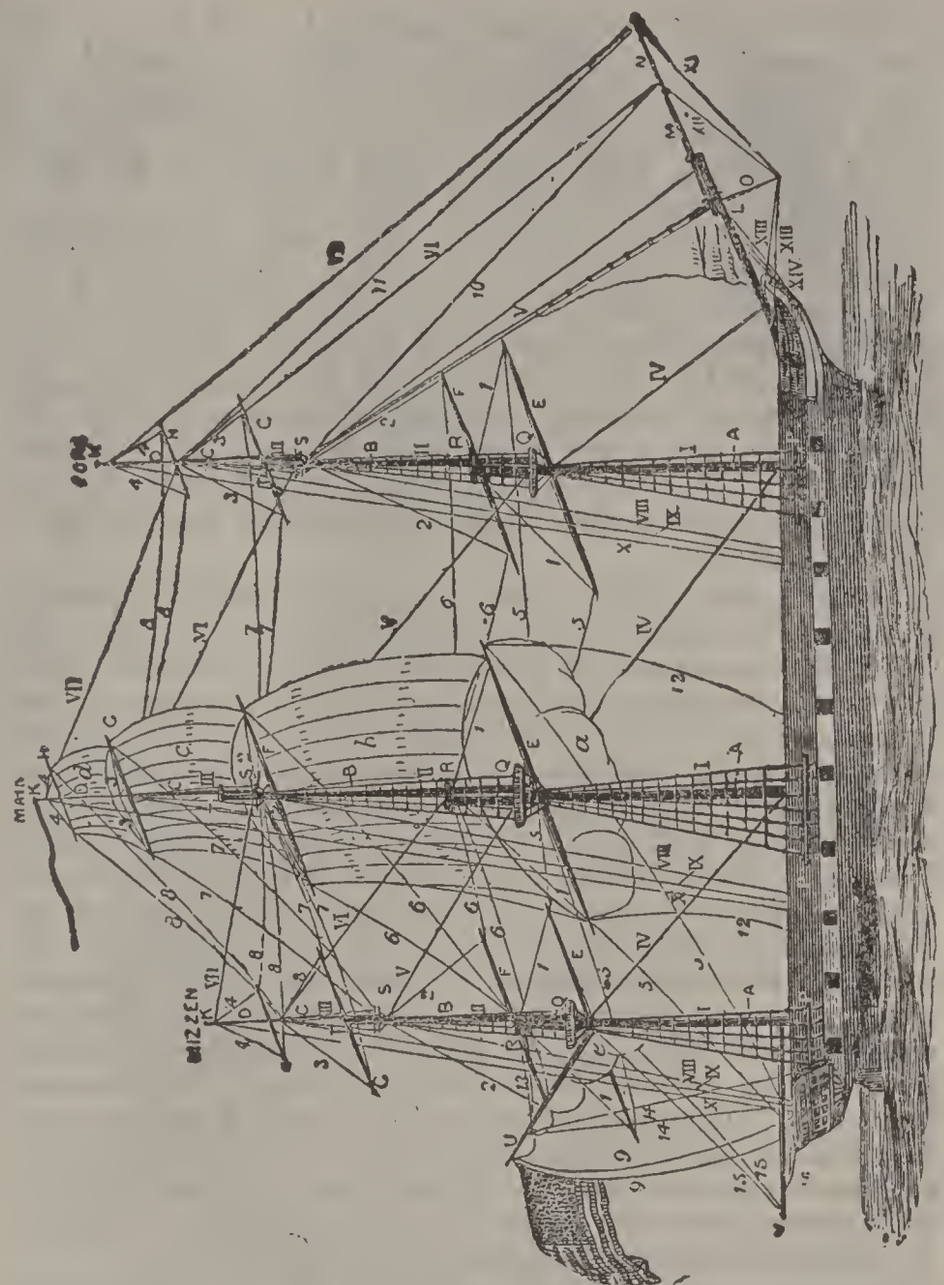


Fig. 3.

Spars, etc.—A, Mast; B, Topmast; C, Topgallantmast; D, Royal-mast; E, Yard; F, Topsailyard; G, Topgallantsail-yard; H, Royal-yard; K, Truck; L, Bowsprit; M, Jib-boom; N, Flying Jib-boom; O, Martingale; P, Chains; Q, Top; R, Cap; S, Crosstrees; T, Topmast Cap; U, Gaff; V, Boom, or Spanker-boom.

Sails.—*a*, Mainsail; *b*, Topsail; *c*, Topgallantsail; *d*, Royal; *e*, Spanker.

Standing Rigging.—I. Shrouds; II. Topmast Shrouds, crossed by Ratlings; III. Topgallant Shrouds; IV. Stay; V. Topmast Stay; VI. Topgallantmast Stay; VII. Royal Stay; VIII. Topmast Backstay; IX. Topgallantmast Backstay; X. Loyal Backstay; XI. Flying Jib-boom Martingale Stays; XII. Jib-boom Martingale Stays; XIII. Martingale Backstays; XIV. Bobstays.

Running Rigging.—1, Lifts; 2, Topsail Lifts; 3, Topgallantsail Lifts; 4, Royal Lifts; 5, Braces; 6, Topsail Braces; 7, Topgallant Braces; 8, Royal Braces; 9, Signal Halyards; 10, Jibstay; 11, Flying Jib-stay; 12, Sheet; 13, Peak Halyards; 14, Vangs; 15, Topping Lifts; 16, Spanker Sheet.

yard-lifts are shown by the numbers 1, 2, 3, 4. The gaff and boom have separate lifts working into the mizzen-top (13, 15). Each jib-sail has a lift (not shown), which acts parallel and close to IV., V., 10, or 11. If the ship carry stay-sails, there will be lifts parallel to the main and mizzen topmast stays and higher stays.

3. The ropes for adjusting the sails when spread. These comprise, first, the sheets for hauling down the lower corners of each sail—specimens are shown at 12; secondly, the braces for turning the yards about, to trim the sails to the wind. Each yard has two braces, one from either end passing to an adjoining mast, except the main braces, which are brought up to the ship's side near the stern. The braces are shown as Nos. 5, 6, 7, 8. The vangs and spanker sheet (14, 16) perform similar offices for the spanker.

RIGGS, *rĭgz*, ELIAS, D.D., LL.D.: Christian missionary: b. New Providence, N. J., Nov. 19, 1810; d. Nov. 21, 1901. He graduated at Amherst 1829, and Andover 1832. He was a missionary of the Amer. Board at Athens and Argos, Greece, 1832-38; at Smyrna 1838-53; and since at Constantinople. On visiting home, he taught Hebrew at Union Theol. Seminary 1857-8, declined a professorship, and returned to Turkey. To him is due a translation of the Bible into Turkish, in both the Arabic an Armenian alphabet (1878); and he has published *A Manual of the Chaldee Language* (1832); *The Young Forester*, a memoir of the Swede missionary Fjelstedt (1840); translation of the Scriptures into modern Armenian (1853); *Grammatical Notes on the Bulgarian Language* (1844); *Grammar of Modern Armenian Language, with Vocabulary* (1847); *Grammar of the Turkish Language, as Written in the Armenian Character* (1871); translation of the Scriptures into the Bulgarian language (1871); *A Harmony of the Gospels in the Bulgarian* (1880); *A Bible Dict. in the Bulgarian* (1884); etc.

RIGGS, KATE DOUGLAS (SMITH) (WIGGIN): American author: b. Philadelphia, Sept. 28, 1857. She was graduated at Abbott Academy (Andover, Mass.) in 1878; was the first to organize free kindergartens for the poor of the Pacific coast. She was married to G. C. Riggs in 1895, but continues to use the name Kate Douglas Wiggin as a literary signature. Her reputation as a humorist was made by the sketch *The Birds' Christmas Carol* (1888), and has been well sustained by the cleverness in description and dialogue of her succeeding volumes, among them: *The Story of Patsy* (1889); *Timothy's Quest* (1890); *Polly Oliver's Problem* (1893); *Marm Lisa* (1896); *Penelope's Progress* (1898); *Penelope's Experiences in Ireland* (1901); and *The Diary of a Goose Girl* (1902); *Ribura* (1903); *The Affair at the Inn* (collaboration, 1904); *Rose o' the River* (1905); *New Chronicles of Rebecca, The Peabody Pew, Finding a Home*, and *The Flag Raising* (1907).

RIGHI, *rē′ghē:* mountain of Switzerland, canton of Schwyz, between Lakes Lucerne, Zug, and Lowerz: it is isolated, and commands extensive views of some of the finest Swiss scenery. It is easily accessible; six mule-paths and the R. railway, opened 1871, lead to the summit, which, though it forms an admirable natural observatory in favorable weather, is only 5,905 feet above sea-level. Verdant pastures clothe the entire summit, and the slopes are belted with forests. Crowds of tourists, men and women, ascend the R. every season, for the fine views which it commands. There is a large hotel at the top, where tourists pass the night, in order to see the sun rise. The native spelling is *Rigi.*

RIGHT, a. *rīt* [AS. *riht;* Goth. *raihts;* Ger. *recht;* L. *rectus*, straight, stretched out; *regĕrĕ*, to rule: Gr. *orĕgō*, I stretch]: straight; not crooked; direct; true; not wrong; according to the standard of truth or of moral rectitude, or to the will of God; not erroneous or wrong; fit; proper; well performed; applied to one of the hands which it is most convenient or *right* to make use of, or which is naturally used in preference to the other, from some inherent physical power in itself (see LEFT); on the right hand, as a leg or a part; applied to the side or bank of a river on the right hand when looking toward its mouth: denoting an angle of 90°: denoting the side of cloth designed to appear externally: N. not the wrong; the side which is not the *left*—i.e., the right side is toward the e. when one faces the n.: perfect standard of truth and justice; justice; freedom from error; legal title (see RIGHT, in Law); just claim; that which justly belongs to one; privilege: V. to relieve from wrong; to do justice to; to restore to its upright position, as a ship: AD. according to the standard of truth and justice; in a right manner; according to fact and truth; directly; in a direct line; very; thoroughly, as *right* valiant—also in this sense, *right* honorable; in *OE.*, just; immediately; at the instant: INT. an expression of approval. RIGHT′ING, imp. RIGHT′ED, pp. RIGHT′FUL, a. *-fûl*, consonant to justice; having a legal or just claim; equitable. RIGHT′FULLY, ad. *-lĭ*. RIGHT′FULNESS, n. *-nĕs*, the state of being rightful; accordance with the rules of right. RIGHT′LY, ad. *-lĭ*, according to justice; properly; fitly; honestly; uprightly. RIGHT′NESS, n. *-nĕs*, the state of being right; conformity to truth. RIGHT AND LEFT, in all directions; on all sides. RIGHT ANGLE, in *geom.*, an angle formed by one straight line standing on another when the adjacent angles are equal; an angle of 90°. RIGHT-ANGLED, a. *-ăng′gld*, in *geom.*, containing one or more right angles. RIGHT ASCENSION and DECLINATION, the equinoctial co-ordinates for defining the position of points of the celestial concave, and indicating their positions relatively to each other, the former being measured on the equinoctial from the first point of Aries eastward, the latter on the secondaries of the equinoctial to the

north and south poles of the heavens from 0° to 90°. RIGHT AWAY or OFF, at once; without delay. RIGHT-HANDED, a. using the right hand more easily than the left. TO PUT ONE'S RIGHT FOOT FOREMOST [the Romans held it a good omen to enter a dwelling by crossing the threshold with the right foot first]: to do one's very best in order to be successful. RIGHT-HANDED SCREW, a screw the threads of which wind spirally from left to right. RIGHT-HEARTED, a. good-hearted. RIGHT HONORABLE, title used in addressing all noblemen below the rank of marquis, their wives, their eldest sons where there is a second title, and the daughters of those above the rank of viscount, all privy councilors, the lord mayors of London and Dublin, the provosts of Edinburgh and Glasgow, and certain others. RIGHT LINE, n. in *geom.*, a straight line. RIGHT-MINDED, a. *-mīnd'ĕd*, well-disposed. RIGHT or LEFT, EXTREME RIGHT, EXTREME LEFT, terms derived from the usage of the French chamber of deputies or legislative assembly, where the party on the side of the administration occupy the *right* side of the hall, and the opposition the *left* side (see FRANCE—*Political Parties*). RIGHT SIDE, the side to be shown; *familiarly*, good graces. RIGHT SPHERE, that position of the sphere, being the appearance to a spectator on the equator, in which the circles apparently described by the heavenly bodies are at right angles to the horizon. RIGHT-WHALE, n. the Greenland whale: see WHALE. AT RIGHT ANGLES, applied to a line which crosses or stands on another perpendicularly. BILL OF RIGHTS (see RIGHTS, DECLARATION AND BILL OF). BY RIGHTS, properly; correctly. ON THE RIGHT, on the same side with the right hand. IN ONE'S OWN RIGHT, by absolute right. TO RIGHT A VESSEL, to restore her to an upright position. TO SET or PUT TO RIGHTS, to arrange; to put into good order.—SYN. of 'right, a.': direct; straight; correct; true; perpendicular; just; equitable; suitable; becoming; lawful; upright; rightful; proper; fit; honest.

RIGHT, in Law: that kind of interest in or connection with a subject-matter which serves as foundation for an action or suit, or other protection of a court of law or equity; hence it means an interest that can be enforced, for if it is such as a court of law or equity cannot take notice of, it may be called a natural or moral, but not a legal right. Strictly speaking, right means merely a relation between external nature and some person, therefore there is no such thing as abstract rights, for a right is intelligible only when predicated of some person who can exercise or enforce it. There is an old practical division of all rights into rights of the person and rights of things. In the former class are included such divisions as rights of personal security and liberty; rights connected with marriage, infancy, etc.; while in the latter class are included the general rights arising out of the possession of real and personal prop-

erty. There are various subjects which do not fall under either division exclusively; indeed, none of the usual divisions of rights can be said to be more than vaguely descriptive of their subjects. It might naturally be expected that the correlative legal expression for rights should be wrongs, but this is not the case, the word wrong being used technically to mean only that class of infringements of one's rights which are connected with the person or the personal use of property. Thus, the refusing or withholding payment of a debt is not correctly called a legal wrong; but an assault or injury to one's person, or to one's property, irrespective of any contract, is properly called a wrong or a tort. The word right is used also more or less technically, in a narrower sense. An action, called a writ of right, had for its object to establish the title to real property; but it was abolished, the same object being secured by the order of ejectment. A *petition of right* is a proceeding resembling an action by which a subject vindicates his rights against the crown, or a citizen against the govt., and recovers debts and claims. A *right of way*, is a right of a private owner or occupier to a way over the land of an adjoining proprietor, as incidental to his possession of a house, or premises, or land. *Right of action*, means simply a right to commence an action in one of the courts of law to recover damages or property. *Right of common*, means a right of one, not the owner or occupier of waste land, to send cattle to graze on it, or to cut turf, or exercise some partial right of property over it. *Right of entry*, is a right to possess and use land or premises, etc.

RIGHTEOUS, a. *rīt′yŭs* or *rī′chŭs* [from Eng. *right*: OE. *rightwys*; AS. *rihtwis*, righteous, pious—from AS. *riht*, right, and *wis*, wise]: *literally*, wise as to what is right; agreeing with right; living, acting, or done according to the will of God; honest; just; equitable. RIGHT′EOUSLY, ad. *-lĭ*. RIGHT′EOUSNESS, n. *-nĕs* [AS. *rihtwisnes*]: what is right; justice; uprightness; conformity of heart and life to the divine law; integrity; the perfection of God's nature.—SYN. of 'righteous': godly; upright; holy; equitable; rightful; just; uncorrupt; virtuous; honest; faithful;—of 'rightful': just; lawful; equitable; proper; honest.

RIGHTS, DECLARATION AND BILL OF: solemn instrument set forth by the convention which called the Prince and Princess of Orange to the throne of England, (1688), known as the *Declaration of Rights*, in which were stated those fundamental principles of the constitution which were to be imposed on William and Mary on their acceptance of the crown. This declaration, drawn up by a committee of the commons, and assented to by the lords, began by declaring that King James II. had committed certain acts contrary to the laws of the realm. The king, by whose authority these unlawful acts had been done, had abdicated the throne; and the Prince of Orange having invited the estates of the realm to meet

and deliberate on the security of religion, law, and freedom, the lords and commons had resolved to declare and assert the ancient rights and liberties of England. It was therefore declared, that the power of suspending and of dispensing with laws by regal authority is illegal; that the commission for creating the late Court of Commissioners for Ecclesiastical Causes, and all commissions and courts of the like nature, are illegal; that the levying of money for the use of the crown by prerogative, without grant of parliament, is illegal; that it is the right of the subjects to petition the king, and all prosecutions for such petitioning are illegal; that the raising or keeping of a standing army in time of peace, except with consent of parliament, is illegal; that Protestant subjects may have arms for their defense; that the election of members of parliament should be free; that freedom of speech in parliament should not be questioned in any place out of parliament; that excessive bail ought not to be required, or excessive fines imposed, or cruel or unusual punishments inflicted; that jurors should be duly impanelled, and that jurors in trials for high treason should be freeholders; that grants and promises of fines and forfeitures before conviction are illegal; and that for redress of all grievances, and the amendment, strengthening, and preserving of the laws, parliaments ought to be held frequently. All these things the lords and commons claimed as their undoubted rights and liberties; and having done so, they resolved that William and Mary should be king and queen of England for their joint and separate lives, the administration being during their joint lives in William alone; and that on their decease the crown should descend to the issue of the queen, then to that of Anne and her posterity, and, failing them, to the issue of William.

This Declaration of Rights was presented to the Prince and Princess of Orange at Whitehall, and accepted by them with the crown. Being originally a revolutionary instrument, drawn up in an irregular assembly, it was considered necessary that it should be turned into law. The Declaration of Rights was therefore brought forward in the parliament, into which the convention had been turned, as a Bill of Rights, and, after various discussions, passed both houses 1689, and obtained the royal assent—a clause, however, being added, which originated in the house of lords, to the effect that the kings and queens of England should be obliged, on coming to the throne, in full parliament or at the coronation, to repeat and subscribe the declaration against transubstantiation; and that a king or queen who should marry a papist would be incapable of reigning in England, and his subjects would be absolved from their allegiance.

RIGHTS OF MAN: famous statement of rights, drawn up principally by Dumont, author of *Souvenirs de Mirabeau*, and solemnly adopted by the French National Assembly, 1789, Aug. 18. It declares that all mankind are originally equal; that the ends of the social union are liberty, property, security, and resistance to oppression; that sovereignty resides in the nation, and that all power emanates from it; that freedom consists in doing everything which does not injure another; that law is the expression of the general will; that public burdens should be borne by all members of the state in proportion to their fortunes; that the elective franchise should be extended to all; and that the exercise of natural rights has no other limit than their interference with the rights of others. Mirabeau endeavored in vain to induce the assembly to postpone publishing any declaration of rights until after the formation of the constitution; but the deputies, feeling that a contrary course might imperil their popularity, issued the declaration—a proceeding which Dumont himself afterward compared to placing a powder-magazine under a building, which the first spark of fire would blow into the air. Louis XVI., under the pressure of the events of Oct. 5, after first refusing, was induced to yield assent to it. The dogma of the equality of mankind, on which the declaration rests, had before been set forth in the American Declaration of Independence of 1776. Thinkers are now much less inclined than in the age of Rousseau to build social theories on such abstract, *a priori* assumptions; and the truth of this doctrine of original equality is directly impugned. Dumont himself asks: 'Are all men equal? Where is the equality? Is it in virtue, talents, fortune, industry, situation? Are they free by nature? So far from it, they are born in a state of complete dependence on others, from which they are long of being emancipated.' To this, the rejoinder, so far at least as concerns the principle stated in the Amer. Declaration, is that the equality claimed is no abstraction but a fundamental element in all rightful and stable government—that all men are to be counted originally equal *before the law*.

The principles laid down in the *Rights of Man* were attacked by Edmund Burke in his *Reflections on the French Revolution*, who represented the declaration as a digest of anarchy. It was in reply to Burke's *Reflections* that Thomas Paine published in London his *Rights of Man*, an apology for, and commentary on, the principles of the French constitution, for which he was prosecuted for libel on an information by the atty.gen. and found guilty.

RIGID, *rĭj'ĭd* [L. *rigĭdus*, stiff, inflexible—from *rigērĕ*, to be stiff: It. *rigido:* F. *rigide*]: not pliant or easily bent; stiff; severely just; strict; unyielding; inflexible; rigorous; in *OE.*, sharp; cruel. RIG'IDLY, ad. *-lĭ*, severely; inflexibly. RIG'IDNESS, n. *-nĕs*, or RIGIDITY, n. *rĭ-jĭd'ĭ-tĭ*, inflexibility; stiffness; quality of resisting

change of form; want of ease. RIGIDULOUS, a. *rĭ-jĭd'ŭ-lŭs*, in *bot.*, rather stiff.—SYN. of 'rigid': inflexible; unyielding; rigorous; unmitigated; unremitted; stern; austere; severe; exact; stiff; unpliant; strict.

RIG'ID DYNAM'ICS: that portion of theoretical Dynamics (q.v.) which, based on the theory of the free and constrained motion of *points*, applies the principles thence deduced to a *system* of points rigidly connected, so as to bear throughout the whole continuance of their motion the same invariable position with relation to each other; in other words, as no body in nature can be considered as a point, but is truly a system of points, rigid dynamics has for its aim to apply the abstract theory of dynamics to the cases actually occurring in nature. For a long time, problems of this sort were not resolved by any general and adequate method, but each class was worked out according to a method specially applicable to its particular circumstances. The great general principle discovered by the French geometer, commonly known as *D'Alembert's principle*, which applies equally to all such problems, and removes the necessity for specially investigating each particular case, was an inestimable boon to mechanical science. It is thus stated in his *Traité de Dynamique:* 'In whatever manner a number of bodies change their motions, if we suppose that the motion which each body would have in the following moment, if it were perfectly free, is decomposed into two others, one of which is the motion which it *really* takes in consequence of their mutual actions, then the other component will be such, that if each body were impressed by a force which would produce it alone, the whole system would be in equilibrium.' In this way every dynamical problem can be compelled to furnish an equation of equilibrium, and so be changed into a problem of *Statics* (q.v.); and thus the solution of a difficult and complex problem is effected by means of the resolution of a much easier one. D'Alembert applied his principle to various problems on the motions and actions of fluids, the precession of the equinoxes, etc.; and subsequently, in a modified form, the same general property was made the basis of a complete system of dynamics, by La Grange, in his *Mécanique Analytique.*

RIGLET: see REGLET.

RIGMAROLE, n. *rĭg'ma-rōl* [a corruption of RAGMAN-ROLL, formerly a popular game consisting in drawing characters from a roll by means of hanging strings, the amusement consisting in the application or misapplication of the characters to the persons who drew them: OE. *ragman*, a name applied to the devil: see RAGMAN'S ROLL]: a succession of confused or nonsensical sentences or statements; a repetition of idle or long foolish stories: ADJ. pert. to or consisting of rigmarole; nonsensical.

RIGOL, n. *rĭ'gŏl* [from OE., *ringle,* a dim. of Eng. *ring;* Ger. *ringel,* a ring, a circle]: in *OE.,* a circle; a diadem.

RIGOR, n. *rĭ'gŏr* or *rĭg'ẽr* [L. *rigor,* stiffness, rigidity —from *rigērĕ,* to be stiff: It. *rigore:* F. *rigueur*]: in *med.,* a sudden coldness accompanied by shivering, symptomatic of the beginning of a disease, especially of a fever. RIGOR MORTIS, *mŏr'tis* [L. stiffness of death]: the stiffening of the body caused by the contraction of the muscles after death.

RIGOR, n. *rĭg'ẽr* [F. *rigueur,* rigor—from L. *rigōrem,* stiffness, rigidity (see RIGOR 1)]: stiffness or severity in opinion, temper, or manners; strictness; sternness; quality of being strict or exact; quality of being severe or very cold, as the weather; unabated exactness; severity of life; in *OE.,* rage; cruelty; fury; hardness. RIGOROUS, a. *rĭg'ẽr-ŭs,* allowing no abatement or relaxation; scrupulously exact or accurate; severe; harsh; very cold, as a winter. RIG'OROUSLY, ad. *-lĭ,* severely; without tenderness or mitigation; exactly; nicely. RIG'OROUSNESS, n. *-nĕs,* the state of being rigorous. RIGORIST, n. *rĭg'ẽr-ĭst,* one very severe and exact in matters of religion; a Jansenist. —SYN. of 'rigor': rigidness; inflexibility; severity; austerity; sternness; cold; stiffness; harshness; strictness; exactness;—of 'rigorous': rigid; inflexible; unyielding; severe; stiff; austere; stern; harsh; strict; exact.

RIG'OR MOR'TIS [L. stiffness of death]: peculiar temporary rigidity of the muscles that occurs shortly after death. It begins immediately after all indications of irritability (see MUSCLE) have ceased, but before the commencement of putrefaction. In the human subject it usually shows itself about seven hours after death, though in some cases 20, or even 30, hours may elapse before it appears. The condition of rigidity usually lasts about 30 hours; but it may pass off in ten hours or less, or may be prolonged to four or six days. The muscles of the neck and lower jaw are first affected, then those of the trunk, then those of the upper extremities, and lastly those of the lower extremities. In its departure, which is immediately followed by decomposition, the same order is followed. It is due to coagulation of fibrinous material contained in the muscular juice or plasma.

RIGVEDA, *rĭg-vē'da:* the first and principal of the four Vedas. See VEDA.

RIIS, *rēs,* JACOB AUGUSTUS: American journalist, author, and social reformer: b. Ribe, Denmark, 1849, May 3. He came to the United States in 1869, and worked at different trades, until he became a reporter on the New York *Sun.* In this work he gained a thorough knowledge of the conditions in the slums of the city, and by his lectures and writings aroused interest in the reforms in the tenement house district, and became a leader in the reform movement. When Theodore Roosevelt was

police commissioner, Riis' thorough knowledge of the city was of the greatest aid to him, and the commissioner was usually accompanied on his all-night tours of investigation by Riis. Under the leadership of the latter police station lodging houses were abolished, small parks in crowded districts opened, playgrounds equipped, and many tenement house evils done away with. He, however, has held but one official position in connection with this reform work, that of secretary of the New York Small Parks Commission in 1897. His first book was *How the Other Half Lives,* published in 1890; other writings are *The Children of the Poor* (1892); *Nibsy's Christmas* (1893); *Out of Mulberry Street* (1898); *A Ten Years' War* (1900); *The Making of an American,* an autobiography (1901); *Battle with the Slums* (1902); *Peril and Preservation of the Home* (1903); *Theodore Roosevelt, the Citizen* (1904).

RILE, v. *rīl* [see ROIL 1, which is the same word]: to stir up and make muddy, as water; to put out of temper. RIL'ING, imp. RILED, pp. *rīld.*

RILEY, *rī'lĭ,* BENNETT: soldier: 1787, Nov. 27—1853, June 9; b. Alexandria, Va. He served in the war of 1812, in the Indian disturbances at various points, won great distinction in the Mexican war, and was brevetted brig. gen. and maj.gen.; was afterward in command on the Pacific coast, and was gov. of the territory of Cal. till it became a state. By various promotions he reached the rank of col.

RILEY, *rī'lĭ,* CHARLES VALENTINE, PH.D., entomologist: b. London, England, 1843, Sep. 18; d. 1895, Sep. 14. He was sent to a college in Dieppe, France, 1854; entered the Univ. of Bonn, Germany, 1857; came to the United States when 17 years of age; and did editorial work on the *Prairie Farmer,* Chicago, interrupted by military service from 1864 to the end of the war. He was state entomologist of Mo. 1868-77, publishing 9 valuable annual reports; and entomologist to the U. S. dept. of agriculture (organizing an entom. div. 1881) 1878-1894. Meanwhile he was a member of the Rocky Mt. locust commission, writing much of the reports. To the National Museum he gave 115,000 insect specimens. His investigations of farm, vineyard, and plantation pests are well known. From the French govt. and the Edinburgh Forestry exhibition, he received gold medals, and was member of many learned societies, and pres. of some. He published *The American Entomologist,* besides hundreds of papers; *Potato Pests* (1876); *The Locust Plague* (1877), and continued to issue reports and bulletins of the U. S. agric. dept., of great value.

RILEY, FORT, *rī'lĭfōrt:* U. S. military reservation, suburb of Junction City, Kan., near the geographical center of the United States, named after Gen. Bennett Riley, U.S.A. It comprises 20,000 acres, was selected for military

purposes 1852, occupied 1855, and made the location of a permanent school of instruction for drill and practice for the cavalry and light artillery service for the army of the United States 1887. When all the buildings are completed (estimated cost $1,500,000), it will be the largest military post on the continent, and its maintenance in all details will aggregate more than $1,000,000 per annum.

RILEY, James Whitcomb: American poet: b. Greenfield, Ind., 1853. After a public-school education, he became a sign-painter, and, when he deemed himself suitably proficient in art, turned strolling player, and composed songs and remodeled plays for the company of which he was a member. Still later, he was editorial writer on the staff of the Indianapolis *Journal.* He began to contribute poems to Indiana papers in 1873. His verses in the Indiana dialect won for him instant success and the sobriquet of the Hoosier Poet, by which he has been generally known. This work is quite unique in American literature. Riley is not, however, limited to this, but has written with melody and imagination in literary English. His public readings from his books became very popular, particularly in the Western States. The poem *Leonainie,* written by him in imitation of Poe, proved one of the most successful of literary hoaxes. He found a wide public, and at the beginning of the 20th century was among the most familiarly known littérateurs of the United States. His earlier verse and his first book, *The Old Swimmin' Hole* (1833), appeared over the signature of Benjamin F. Johnson of Boone. Subsequent volumes are *Character Sketches and Poems* (1887); *Afterwhiles* (1888); *Pipes o' Pan at Zekesbury* (1889); *Old-Fashioned Roses* (1891); *Neighborly Poems* (1891); *Armazindy* (1894); *Rubaiyat of Doc Sifers* (1897); *Home-Folks* (1900); *Out to Old Aunt Mary's* (1903); *A Defective Santa Claus* (1904); *While the Heart Beats Young* (1906); *Raggedy Man,* and *Morning Poems* (1907).

RILEY, John: English painter: b. Bishopsgate, London, 1646; d. there 1691. He did not rise into notice until the death of Sir Peter Lely, and remained unsurpassed until the appearance of Sir Joshua Reynolds. He was an imitator of Van Dyck, and in both drawing and coloring must be reckoned one of the best portrait painters of his time. He painted the portrait of Charles II., who rather disconcerted the artist by exclaiming: 'Is this like me? Then, odd's fish, I am an ugly fellow.' He also painted James II. and his queen, William and Mary, Bishop Burnet, Dr. Busby of Westminster, and Lord Keeper North.

RILIEVO, n. *rĭ-lē'vō* [It.]: the proper spelling of Relievo, a term in the fine arts. See under Relief.

RILL, n. *rĭl* [Low Ger. *rille*, a little stream: Dut. *rillen*, to shiver: Icel. *rylla*, to tumble about]: a very small brook; a streamlet: V. to run in very small streams. RILL′ING, imp. RILLED, pp. *rĭld*.

RIM, n. *rĭm* [AS. *rima*, margin, edge: Dan. *bryn*, the surface of the sea, the brow or rim of the eye: W. *rhim*, the edge or rim: comp. Gael. *riomh*, a wheel]: the edge or margin which surrounds a thing, as of a bowl; the outer circle of a wheel; the border; the lower part of the belly: V. to put a rim or hoop to. RIM′MING, imp.: N. the act of putting around a rim or border. RIMMED, pp. *rĭmd*.

RIM, n. *rĭm* [see RIM 1: comp. Gael. *reamhar*, fat]: in *OE.*, the peritoneum; a thin fatty membrane which lines the interior of the abdomen, and envelops the internal viscera.

RIMA, n. *rī′ma* [L.]: a cleft, as the rima of the glottis; in *bot.*, the cleft-like ostiolum of certain fungals.

RIMA-SZOMBATH, *rē′mâ-sŏm′bât:* market-town of Hungary, on the river Rima, 23 m. n.e. of Pesth. Articles in wood are largely manufactured, and there is trade in linen and bullock's hides. Pop. (1880) 4,500.

RIMBLE-RAMBLE, a. *rĭm′bl-răm′bl* [imitative word]: vague and humdrum; applied to a rambling and unmeaning discourse.

RIME, n. *rīm* [AS. *hrim;* Dut. *rijm;* Sw. *rim*, hoar-frost: Icel. *hrim*, soot, hoar-frost]: hoar-frost; congealed dew or vapor. RIMY, a. *rīm′ĭ*, abounding with rime; frosty.

RIME, n. *rīm* [L. *rima*, a crack or cleft]: chink; fissure; a rent or long aperture.

RIME, or RHIME, or RHYME, n. *rīm* [AS. *rīm;* Ir. *rimh*, number, rime: It. *rima;* F. *rime;* Ger. *reim*, rime]: correspondence of sound in the terminations of words at the end of successive or alternate lines of certain kinds of poetry; a word or sound to answer to another; poetry: V. to put into rime; to make verses or lines terminate in words or syllables similar in sound. RI'MING, imp. RIMED, pp. *rīmd:* ADJ. put into rime. RIM'ER, n. *-ėr*, or RIMESTER, n. *rīm'stėr*, a versifier; a poor poet, in contempt. RIME'LESS, a. *-lĕs*, without rime. WITHOUT RIME OR REASON, *literally*, without number or sense; *proverbially*, without sense or motive; absurd. *Note.*—The proper spelling, RIME, has been rarely used: it is now being adopted. The spelling *rhyme* has obtained currency from a supposed connection with *rhythm*—from L. *rhythmus: rhyme* and *rhythm* are not identical in meaning. It is very natural that L. *rhythmus*, which signified metrical writing, should be gradually applied to the *rhyme* which became the most striking and characteristic feature in such compositions. —*Rime*, in early English (and the same is true of Ger. *reim* and the other forms of the word in northern tongues as well as in the Romanic), meant simply a poem, a numbered or versified piece (compare Lat. *numeri*, numbers = verses, versification); but it has now come to signify what is the most prominent mark of versification in all these tongues, namely, the recurrence of similar sounds at certain intervals. As there may be various degrees and kinds of resemblance between two syllables, there are different kinds of R. When words begin with the same consonant, we have *Alliteration* (q.v.), which was the prevalent form of R. in the earlier Teutonic poetry (e.g., Anglo-Saxon). In Spanish and Portuguese, there is a peculiar kind of R. called *Assonance*, consisting in the coincidence of the vowels of the corresponding syllables, without regard to the consonants; this accords well with the character of these languages, which abound in full-toned vowels, but is ineffective in English and other languages in which consonants predominate. In its usual sense, however, R. denotes correspondence in the final syllables of words, and is used chiefly to mark the ends of the lines or verses in poetry. Complete identity in all the parts of the syllables constitutes what the French call *rich* R. as in mo*dèle*, fi*dèle;* beau*té*, san*té*. But though such rimes are not only allowed but sought after in French, they are considered faulty in English, or rather as not true rimes. No careful writer would make *deplore* rime with *explore*. Riming syllables in English must agree so far, and must differ so far; *the vowel and what follows it—if anything follow it—must be the same in both; the articulation before the vowel must be different.* Thus, m*ark* rimes with l*ark*, b*ark*, *ark*, but not with re*mark*. In the case of *mark* and *ark*, the absence of any initial articulation in the last of the two makes the necessary difference. As an example of R. where nothing follows the vowel, we may take be-

low, which rimes with fore *go*, or with *O!* but not with *lo*. To make a perfect R., it is necessary, besides, that both the syllables be accented; *free* and merri*ly* is hardly an allowable R., though such rimes are used by some writers. It is to be noted that R. depends on the sound, and not on the spelling. *Plough* and *enough* do not make a R., nor *ease* and *decease*.

Such words as *roaring*, de-*ploring*, form *double* rimes; and an-*nuity*, gra-*tuity*, *triple* rimes. In double or triple rimes, the first syllable must be accented, and the others ought to be unaccented, and to be completely identical in sound. In the sacred Latin hymns of the middle ages, the rimes all are double or triple. This was a necessity of the Latin language, in which the inflectional terminations are without accent, which throws the accent in most cases on the syllable next the last—do-*lorum*, vi-*rorum*; sup-*plicia*, con-*vicia*. Although rimes occur chiefly between the end-syllables of different lines, they are frequently used within the same line, especially in popular poetry:

> And then to see how ye're negleckit,
> How *huff'd*, and *cuff'd*, and disrespeckit.
>
> *Burns.*

> And ice mast-*high* came floating *by*.
>
> *Coleridge.*

(See LEONINE VERSES.)

When two successive lines rime, they form a *couplet*; three form a *triplet*. Often the lines rime alternately or at greater intervals, forming groups of four (*quatrains*) or more. A group of lines embracing all the varieties of metre and combinations of R. that occur in the piece, forms a section called a *stave*, sometimes a *stanza*, often, but improperly, a *verse*. In the days of Acrostics (q.v.) and other conceits, it was the fashion to interlace rimes in highly artificial systems; the most complex arrangements still current in English are the Sonnet (q.v.) and the Spencerian (q.v.) stanza. Tennyson has accustomed the English ear to a quatrain, in which, instead of alternate rimes, the first line rimes with the fourth, and the second with the third.

It is a mistake to deem R. a mere ornament to versification. Besides being in itself a pleasing musical accord, it serves to mark the endings of the lines and other sections of the metre, and thus renders the Rhythm (q.v.) more distinct and appreciable than the accents alone can do. So much is this the case, that in French, in which the accents are feeble, metre without R. is so indistinguishable from prose, that blank verse has never obtained a footing, notwithstanding the war once waged by French scholars against rimed versification. 'The advantages of rime,' says Guest (*English Rhythms*), 'have been felt so strongly, that no people have ever adopted an accentual rhythm without also adopting rime.' The Greek and Latin metres of the classic period, depending on time or quantity, and not on accent, were

able to dispense with the accessory of R.; but, as has been well observed by Trench (*Sacred Latin Poetry, Introduction*, 1864), even 'the prosodic poetry of Greece and Rome was equally obliged to mark this (the division into sections or verses), though it did it in another way. Thus, had dactyls and spondees been allowed to be promiscuously used throughout the Hexameter (q.v.) line, no satisfying token would have reached the ear to indicate the close of the verse; and if the hearer had once missed the termination of the line, it would have been almost impossible for him to recover it. But the fixed dactyl and spondee at the end of the line answer the same purpose of strongly marking the close, as does the rime in the accentuated verse; and in other metres, in like manner, licenses permitted in the beginning of the line are excluded at its close, the motives for this greater strictness being the same.' It is chiefly, perhaps, from failing to satisfy this necessary condition, that modern unrimed verse is found unsatisfactory, at least for popular poetry; and it may be doubted whether it is not owing to the classical prejudices of scholars that our common English blank verse got or maintained its hold. It may however be conceded that a defective or strained R. is worse than none; such futile attempts at art reduce some hymns in common use to the grade of doggerel.

The objection that R. was 'the invention of a barbarous age, to set off wretched matter and lame metre,' rests on ignorance of its real history. It cannot be considered as the exclusive invention of any particular people or age. Its use has its due limits; but in its place it is something human, and universal as poetry or music—the result of the instinctive craving for well-marked recurrence and accord. The oldest poems of the Chinese, Indians, Arabians, etc., are rimed; so are those of the Irish and Welsh. In the few fragments of the earliest Latin poetry extant, in which the metre was of accentual, not quantitative kind, there is a manifest tendency to terminations of similar sound. This native tendency was overlaid for a time by the importation from Greece of the quantitative metres; yet even under the dominance of this exotic system, riming verses were not altogether unknown; Ovid especially shows a liking for them:

Quot cœlum stellas, tot habet tua Roma puellas;

and in the decline of classicality they became more common. At last, when learning began to decay under the irruptions of the northern nations, and a knowledge of the quantity of words—a thing in a great measure arbitrary, and requiring to be learned—began to be lost, the native and more natural property of accent gradually reappeared as the ruling principle of Latin rhythm, and with it the tendency to rime In this new vehicle the early Christian poets sought to convey their new ideas and aspirations. The rimes were at first often rude,

and not sustained throughout, as if lighted upon by chance. Distinct traces of the adoption of R. are seen as early as the hymns of Hilary (died 368), and the system attained its greatest perfection in the 12th and 13th c. In refutation of the common opinion, that the Latin hymnologists of the middle ages borrowed the art of R. from the Teutonic nations, Dr. Guest brings the conclusive fact, that no poem exists written in a Teutonic dialect with final R. before Otfried's *Evangely*, written in Frankish about 870. Alliteration had previously been the guiding principle of Teutonic rhythms; but after a struggle, longer protracted in England than on the continent, it was superseded by end-rimes.—See Guest's *History of English Rhythms* (2 vols. Lond. 1838), where the whole subject is learnedly and elaborately treated; Trench's *Sacred Latin Poetry, Introduction* (Lond. 1864); F. Wolf, *Ueber die Lais, Sequenzen, und Leiche* (Heid. 1841).

RIMINI, *rē′mē-nē* (anc. *Ariminium*): famous old city of Italy, prov. of Forli, in Romagna; having the Adriatic on the n., the small stream Ausa on the e., and the Marecchia river on the w. It seems to have been inhabited first by the Umbrians, then for many centuries by the Etruscans. The Senones, a Gaulish tribe, took the place B.C. 4th c., and Brennus, toward the end of the same c., fixed his seat here. The Gauls were dispossessed by the Romans after a century of occupation, and R. became a Roman military colony and cap. of Gallia Togata. Later the great Flaminian Way was constructed from R. to Rome; and the town was connected by other great highways with the important places in n. Italy. A marble bridge of 5 arches, built in the time of Augustus, across the Marecchia, is yet standing, as is also the marble arch erected by decree of the senate in honor of that emperor. After the downfall of the Rom. empire, R. was a bone of contention for Goths, Byzantines, Longobards, Franks, popes, emperors, Guelfs and Ghibellines: under the family of Malatesta, R. was for 200 years prominent among the states of mediæval Italy. In modern times its prosperity and size have declined.—R. has been a bishop's see since 260. It has fine streets, well-built houses, a handsome town hall with porticoes, many fine churches—including the cathedral, a noble pile erected by Leone Pattista Alberti: its interior is full of monuments. In the Piazza Cavour is a bronze statue of Pope Paul V.; in the Piazza Giulio Cesare a pillar marks the spot on which Julius Cæsar harangued the 13th legion after the crossing of the Rubicon. There is a considerable public library, founded 1617 now containing 23,000 vols. The Palazzo del Comune has a small collection of paintings. The industries of R. are fishery, sulphur mining, silk weaving, and traffic. Pop. over 13,000.

RIMMING: see under RIM 1.

RIMOSE, a. *rī-mōs′*, of RIMOUS, a. *rī′mŭs* [L. *rīmōsus*, full of cracks—from *rīma*, a cleft: It. *rimoso*]: in *bot.*, covered with cracks or fissures, mostly parallel, as the bark of a tree; chinky. RIMOSE′LY, ad. *-lĭ*. RIMOSITY, n. *rī-mŏs′ĭtĭ*, the state of being rimose or chinky. RIMULOSE, a. *rĭm′ŭ-lōs*, having small marks or chinks.

RIMPLE, v. *rĭm′pl* [AS. *hrympelle;* O. Dut, *rimpel*, a wrinkle]: to wrinkle; to pucker; to corrugate: N. a fold or wrinkle. RIM′PLING, imp. RIM′PLED, pp. *-pld:* ADJ. puckered; wrinkled.

RIND, n. *rīnd* [A.S. *rind;* Dut. and Ger. *rinde*, crust or bark]: the skin or outer coat of fruit, etc.; the peel; the bark of trees.

RINDERPEST, n. *rĭn′der-pĕst* [Ger. *rinderpest*—from *rinder*, black cattle, kine; *pest*, a pestilence]: cattle-plague; a peculiarly fatal disease of cattle and dairy stock, propagated by contagion: see CATTLE-PLAGUE.

RINEHART, *rīn′hârt*, WILLIAM HENRY: sculptor: 1825, Sep. 13—1874, Oct. 28; b. Carroll co., Md. In 1844 began the study of drawing and other arts. He studied in Italy 1855-57, returned to Baltimore, where he remained only a short time, and 1858 took up his residence in Rome, though he visited the U. S. 1866 and 72. He finished the bronze doors of the national capitol at Washington, which had been left incomplete at the death of Crawford; executed a statue of Chief-Justice Taney for the state of Maryland, and a large number of ideal works, among which are *Hero and Leander*, *St. Cecilia*, *Clytie*, *The Woman of Samaria*, and *The Angel of the Resurrection*. He died at Rome.

RINES, GEORGE EDWIN: editor and encyclopedist; 1860, Dec. 28, b. Maitland, N. S. He came to the United States when 11 years old, and attended the public schools of Brooklyn, N. Y., graduating from grammar and high school. After leaving school he was engaged for some time in business, but continued his studies and in 1887 entered Colgate Univ. In 1890 he entered Hamilton Theol. Seminary (Colgate Univ.) for the full Hebrew and Greek course in theology, graduating in 1893. He became pastor at Binghamton, N. Y., where he remained two years, then was called to the pastorship of the Baptist Church at Ridgewood, N. J., which he served three years, resigning to devote himself to literary work. Mr. Rines has been a frequent contributor to the religious press and other periodicals. In 1903 he was appointed managing editor of the *Encyclopedia Americana*, and has contributed very largely to that work biographical and historical articles. While still holding this position, in 1906 became a member on the board of the *United Editors' Encyclopedia and Dictionary*. Among his distinguishing characteristics are originality, business aptitude, and a talent for organization.

RING, n. *rĭng* [Icel. *hringr;* OHGer. *hrinc*, a circle, a ring: Dan, *kringel*, crooked, twisted]: a circle; anything in the form of a circle: a small hoop of gold, variously ornamented, worn as on the finger (see below): a hoop: a circular course; the betting arena on a race-course: in *politics*, a small company of persons privately associated for certain objects, usually for personal advantage: V. to encircle; to fit with a ring; to cut a ring of bark out of a tree; to form a circle. RING'ING, imp. RINGED, pp. *rĭngd.* RING'LESS, a. *-lĕs*, without a ring. RING-BOLT, an iron bolt having a ring at one end. RING-DOVE, wood-pigeon or cushat (see PIGEON). RING-FENCE, a fence encircling an estate within one inclosure; an inclosing fence or line. RING-FINGER, the third finger of the left hand, on which the wedding-ring is put. RING-HEAD, an instrument used to stretch woolen cloth. RING-MAIL, in *armor*, small rings of steel sewed edgewise upon a strong garment of leather or quilted cloth. RING-SAIL, a light sail set abaft the spanker. RING-SHAPED, a. having the shape of a ring. RING-STREAKED, a. having circular streaks or lines on the body. RING-TAIL, the female of the hen-harrier. RING-TAILED CAT, n. name given by the miners to *Bassaris astuta*, one of the *Procyonidæ*, occurring in California, Texas, and the higher regions of Mexico. It is about 3 ft. long, the tail being one-third of this length. The fur is brown, and the tail beautifully ringed. It is easily tamed, and makes an excellent mouser, whence its misleading popular name; called also *cacomixle.* FAIRY RINGS: see FAIRY RINGS.

Ring-mail.

Ring-sail.

RING, v. *rĭng* [Icel. *hringia*, to ring bells: Dan. *ringe;* Sw. *ringa;* Dut. *ringen*, to ring or tinkle]: to sound, as a bell or other sonorous body; to cause to sound; to resound; to utter a sound as a bell; to tinkle; to be spread abroad, as, the whole town *rang* with the news: N. the sound as of a bell or a metallic body; the loud repeated sounds, as of voices in acclamation; a peal or chime of bells. RING'ING, imp. RANG, pt. *răng.* RUNG, pp. *rŭng.* RINGER, n. *rĭng'ẽr*, one who rings bells. RINGING THE CHANGES, *literally*, ringing a peal in which the order of the bells is changed in each round; *hence*, repeating the same thing again and again with variations; also, a trick employed by vagabond gamesters to cheat their victims by changing or juggling with money.

RING: circle of gold or other material worn as ornament. The practice of wearing rings has been widely prevalent in different countries and at different periods. Rings have been used to decorate the legs, arms, feet, toes, neck, fingers, nose, and ears. The practice of wearing rings suspended from the nose, which is bored for that purpose, has been found among various savage tribes, particularly the South Sea islanders. Bracelets, necklaces, and ear-rings have been worn among nations both savage and civilized; but the most universal and most famous use of rings is on the finger. Finger-rings are alluded to in the Books of Genesis and Exodus; Herodotus mentions that the Babylonians wore them; and from Asia probably they were introduced into Greece. The rings worn in early times were not purely ornamental, but had also their use as signet-rings. The Homeric poems make no mention of rings, except ear-rings; but in the later Greek legends, the ancient heroes are described as wearing finger-rings; and every freeman throughout Greece seems afterward to have had one. The practice of counterfeiting signet-rings is alluded to as existing in Solon's time. The devices on the earlier rings were probably cut in the gold; but at a later period, the Greeks came to have signet-rings set with precious stones, which gradually passed from articles of use into the category of ornament. Persons were no longer satisfied with one ring, but wore two or three—and their use was extended to women. The Lacedæmonians wore iron rings. The Romans are said to have derived the use of rings from the Sabines; their rings were at first, as those of the Greeks, signet-rings, bu' of iron. Every free Roman had a right to wear one; and till the close of the republic, the iron ring was worn by those who affected the simplicity of old times. Ambassadors, in the early age of the republic, wore gold rings as part of their official dress—a custom afterward extended to senators, chief magistrates, and in later times to the equites, who were said to enjoy the *jus annuli aurei*, from which other persons were excluded. It became customary for the emperors to confer the *jus annuli aurei* on whom they pleased, and the privilege grew gradually more extensive, till Justinian embraced within it all citizens of the empire, whether *ingenui* or *libertini*. The signs engraved on rings were very various, including portraits of friends or ancestors, and subjects connected with mythology or religion; and in the art of engraving figures on gems, the ancients far surpassed artists of modern times (see GEM). The later Romans, like the Greeks, crowded their fingers with rings, and the more effeminate among them sometimes had a different ring for summer and winter. Rings entered into the ground-work of many oriental superstitions, as in the legend of Solomon's ring, which, among its other marvels, sealed up the refractory Jinns in jars and cast them into the Red Sea. The Greeks mention various rings endowed with magic power, as that of Gyges,

which rendered him invisible when its stone was turned inward; and the ring of Polycrates, which was flung into the sea to propitiate Nemesis, and found by its owner inside a fish; and there were persons who made a lucrative traffic of selling charmed rings, worn mostly by the lower classes.

Fig. 1.

Various explanations have been given of the connection of the ring with marriage. It appears that wedding-rings were worn by the Jews prior to Christian times. Fig. 1 shows a Jewish marriage-ring beautifully wrought in gold filigree, and richly enamelled, recently in possession of Lord Londesborough. It has been said that as the delivery of the signet-ring to any one was a sign of confidence, so the delivery of a ring by the husband to the wife indicated that she was admitted into his confidence. Another explanation is, that the form of the ring symbolizes eternity and constancy; and it has been alleged that the left hand was chosen to denote the wife's subjection to her husband, and the third finger because it thereby pressed a vein which was supposed to communicate directly with the heart. The third finger has always been selected as the finger on which official rings are worn. Bishops on their consecration receive a ring to be worn on the third finger of the right hand, in order to indicate ecclesiastical authority; and doctors formerly, for a similar reason, wore a ring on the same finger. A ring has been much used at betrothal as well as marriage, and in many parts of the continent of Europe a wedding-ring is worn by the husband as well as the wife. Rings are occasionally worn on all the fingers (even on the first finger) except the thumb; the Germans usually wear a signet-ring on the first finger. During the 16th, 17th, and 18th c. it was very common to have mottoes inscribed on rings (fig. 2), including wedding-rings, and the motto was called the *posy* or *chanson*. The ring was the symbol of the dominion of Venice over the Adriatic; and yearly, on Ascension Day, a ring was thrown by the doge from the ship *Bucentaur* into the sea, to denote that as the wife is subject to her husband, so is the Adriatic Sea to the republic of Venice.

Fig. 2.

In pagan times in Europe, the ring seems to have been connected with fidelity or with espousals. Fig. 3 shows

a form of betrothal-ring called a *gimmal*, or linked ring, used in later times; the upper fig. shows the three parts

Fig. 3.

brought together; the lower fig., the parts separately. By an ancient Norse custom, described in the *Eyrbrygia Saga*, when an oath was imposed, he by whom it was pledged passed his hand through a silver ring, sacred to that ceremony; and in Iceland the ceremony of betrothal used to be accompanied by the bridegroom passing his four fingers and thumb through a large ring, and in this manner receiving the hand of the bride, as represented in a woodcut in an old ed. of *Olaus Magnus*. As lately as 1780, the practice existed in Orkney of a man and woman plighting their faith at the Standing Stones of Stennis by joining their hands through the perforated stone of Odin.

Rings were greatly used in ancient Egypt. They were called *tebh*, finger-rings, and *khatem*, signets, both kinds being represented in the sculptures and mentioned in the hieroglyphs. Besides these two classes, solid rings of gold and silver were used as money (see RING MONEY). Rings for the fingers are of most remote antiquity, and were emblems of rank and power. They were of two kinds: the solid ring, of gold, silver, copper, or iron, having a square or oval bezel, on which the subject to be impressed was sunk or cut in intaglio. The oldest of these were of gold, iron not having been in use till the Roman rule over Egypt, or about the 1st c. after Christ. A remarkably fine specimen is one of a Hemphite priest or flamen of the monarch Cheops, in the time of the 26th dynasty, about B.C. 5th c. But rings of this class are probably not so old as the other kind, which have a square or oblong plinth of gold, stone, or glass, on which the subjects are engraved also in intaglio. These plinths are pierced through their long axis to admit the metal ring on which they revolve, and are secured to it by wire coiled round the ring at the place of insertion. Scarabæi of glazed steatite, set in frames of gold or silver, were often used for bezels.

The bezels have their base engraved with hieroglyphs and other subjects, the names of monarchs, figures of deities, mottoes, and devices. Such rings were used by functionaries; and in the account of the investiture of Joseph in the Book of Genesis, a ring was put on his finger as a symbol of his rank. The poorer classes had rings of ivory or blue porcelain, with solid oval bezels, having in intaglio similar subjects. Rings appear to have been placed on all the fingers, and even the thumb, and the hands of ladies were loaded with these costly ornaments. A cat, emblem of the goddess Bast or Pasht, the Egyptian Diana, was a favorite subject of ladies' rings. The third finger of the left hand was the ring-finger. Some remarkable instances of gold rings with revolving bezels have been found—e.g., that of Thothmes III. in the collection of Lord Ashburnham, and another with the name of the monarch Horus, which contained gold to the value of $100. Such rings could give two impressions, like the seal and counterseal of modern times.—Wilkinson, *Mann. and Cust.* III. 370, *et seq.*; Bonomi, *Trans. R. Soc. Lit.*, New Series, I. 108; Prisse, *Mon. Egypt.*, Pl. xlvii.; also *Antique Gems and Rings*, by King, 2 vols. 1872; *Finger Ring Lore*, by William Jones, 1876.

RING'BONE, in Horses: a circle of bony matter round the horse's coronet, most frequent in the fore limbs of draught horses with short upright pasterns, which are much worked on the hard roads; but appearing occasionally also on the hind limbs of lighter-bred horses. It is sometimes hereditary but is often caused by a violent strain. Though the lameness can often be relieved by proper treatment, R. is always a'blemish. Rest should be enjoined, and cold bran poultices or swabs, kept cool and moist by any refrigerant mixture, applied continuously until heat and tenderness are removed, when the fetlock is to be dressed with fly-blister or the ointment of red iodide of mercury.

RINGENT, a. *rĭn'jĕnt* [L. *ringens* or *ringen'tem*, opening wide the mouth—from *ringor*, I open the mouth]: in *bot.*, applied to a labiate flower in which the upper lip is much arched and the lips are separated by a distinct gap; gaping.

RINGGOLD, *rĭng'gōld*, CADWALADER: naval officer: 1802, Aug. 20—1867, Apr. 29; b. Md. He became midshipman in the navy 1819, was in the expedition against the pirates in the W. I. 1823–4, commanded a brig in an exploring expedition to the Antarctic continent 1838, aided in the survey of Puget Sound and San Francisco harbor, was on special duty at Washington 1859–60, and at the opening of the civil war was given command of the *Sabine*, and assisted in the blockade of southern ports. He was promoted capt. 1856, commodore 1862, was placed on the retired list 1864, and promoted rear-admiral 1866. He died at New York.

RINGLEADER, n. *rĭng'lēd-ėr* [*ring*, and *leader*]: the leader of a ring; the head of a society engaged in an illegal enterprise; the head or chief of a riotous body of persons.

RINGLET, n. *rĭng'lĕt* [dim. of RING 1]: a small ring; a curl of hair. RING'LETED, a. having ringlets.

RING MONEY: primitive medium of exchange, consisting of the precious metals formed into rings, in an early stage of society, prior to the invention of coinage, but after the inconveniences of direct barter had been discovered. R. M. was in use among the Egyptians. The gold or silver rings were formed of a wire or bar of metal bent into a circle, but not quite united at the extremities, so that it could be easily made into a chain, from which portions could be detached at pleasure. It seems probable that the individual loops were not adjusted to a particular weight, but that each bundle of loops amounted in the aggregate to a particular weight. R. M. of gold and silver, similar to what is represented in the Egyptian paintings, was brought by Bonomi from Nubia. Some of the silver rings had been worn as bracelets, and were ornamented with engraved work. This kind of currency has probably never gone out of use in parts of Africa since the remote period when it was employed in paying the exactions of the Pharaohs. R. M. for African traders is, or was, not long ago, regularly manufactnred at Birmingham, England, of copper, or an alloy of copper and iron, and known under the name of 'Manillas.'

The R. M. of the East early found its way to western Europe. In Sweden and Norway its use seems to have continued till the 12th c., or even later. A Norse law about 1220 alludes to an established R. M., of which each ring was of definite weight. The mediæval had so far advanced beyond the Egyptian as to have each ring adjusted to a special weight, for which it might pass without weighing. Cæsar mentions gold and iron rings as used in Gaul and Britain for money; and gold and silver and occasionally brass R. M. has been dug up in many parts of Britain, consisting of bars of metal bent in circular shape. A remarkable silver chain of 33 rings, weighing above 93 ounces, was dug up 1805 near Inverness, in the course of the excavations for the Caledonian canal, and is now in the museum of the Scottish Antiquaries. Some of the larger specimens of gold R. M. are very highly decorated. The gold torque worn round the neck of the Gallic warriors, weighing sometimes as much as four lbs., besides being a personal ornament, was adjusted to a certain weight as money.—There were various modifications of R. M.—e. g., the silver fish-hook money of Ceylon, mentioned by Tavernier.

RING OU'ZEL (*Turdus torquatus*, or *Merula torquata*): species of thrush, rather larger than the blackbird, which it much resembles. It is a native of Europe, chiefly of the w. parts; spends the winter in s. Europe or in Africa, and visits more northern regions in summer. It is frequent in many parts of the British Islands, not in the thickly-peopled districts. It makes its nest generally in heathy banks, often under a bush. The nest is of coarse grass, within which is a thin shell of clay and an inner lining of fine dry grass. The ring ouzel is a constant visitor of gardens in the neighborhood of its haunts, committing great depredations, particularly when cherries are ripening. In Scotland it is known as the *Moor Blackbird*. It is of dark-brown color, almost black; the feathers edged with blackish-gray, the feathers of the wings more conspicuously edged with gray; a crescent-shaped white collar on the throat. The song consists of a few loud, clear, and plaintive notes.

RING PLOVER, or RINGNECK: a common plover or dotterel (q.v.) of the whole northern hemisphere (*Ægialitis hiaticula*), distinguished by its black collar and its brilliant, gold-colored eyes. This bird was formerly celebrated in European folk-medicine. To be cured of the jaundice it was held to be only necessary to look fixedly at the bird's eyes with a firm faith in the success of the experiment. See PLOVER.

RING SNAKE: the name of various serpents with a band encircling the body, especially at the neck. In the United States the name belongs especially to a small harmless serpent of the warmer states (*Diadophis punctatus*), which is found 'coiled up under stones, logs or the bark of fallen trees, chiefly in forests.' It is bluish black above, yellowish orange beneath and has a whitish collar. In Great Britain the common grass-snake (q.v.) is often so called; in South America, the many-banded coral-snakes and in South Africa a large black and yellowish venomous hooded snake (*Sepedon hæmachates*) known to the Dutch as 'ringhals,' and differing from the cobras only in anatomical peculiarities. Consult Gadow, *Amphibia and Reptiles* (1901).

RING-TAILED LEMUR, or 'MADAGASCAR CAT': a species (*L. catta*) of lemur of the sub-family *Lemurinæ*, native of Madagascar. It is unlike the rest of the lemurs as it remains upon the ground, especially about rocks, and is easily caught and readily tamed. It is remarkable for the fact that the sexes differ in color, the male being black, while the female is reddish brown with white whiskers and ear-tufts, and the tail alternately ringed with brown and white. Consult: Beddard, *Mammalia* (1902); Forbes, *Allen's Naturalists' Library* (1894).

RING'WORM: popular term for several distinct forms of skin-disease which occur in patches of circular or annular form on the body, especially on the scalp. Thus, a species of Lichen (q.v.), known to dermatologists as *Lichen circumscriptus,* in which the papules assume a circular arrangement, is commonly regarded as ringworm; and the two species of Herpes (q.v.), *Herpes circinatus* and *H. Iris,* in which the vesicles occur in circular patches and in concentric rings, are popularly included in the same term. These, however, are not true ringworm (*Tinea trichophytina* or *T. tonsurans*), which is a disease dependent on the presence of a special vegetable (fungus) parasite, now known to botanists as *Trichophyton tonsurans,* or hair-plant, and discovered 1845 by Malmsten. It con-

Parasitic Fungus from the Root of the Hair in a Case of True Ringworm, highly magnified.
(Copied from Aitken's *Science and Practice of Medicine,* 3d ed.)
A, isolated spores; B, spores united at their ends; C, C, empty tubes; D, sporular tubes.

sists of oval, transparent spores or globules, about $^1/_{7000}$ of an inch in diameter, mostly isolated, but sometimes connected by articulated filaments. This fungus is seated in the interior of the hair-roots, and the hairs and the fungi simultaneously increase in size. The diseased hairs lose their elasticity and break, when they have risen a line or two above the scalp. In these cases the short stump of hair soon loses all its characteristics. If the hair breaks before emerging from the scalp, a little prominence is formed, consisting of fungus, epidermis, and sebaceous matter. There are three varieties of true ringworm, described by Aitken under the following names: (1.) Ringworm of the Body (*Tinea circinatus;* (2.) Ringworm of the Scalp (*Tinea tonsurans*); (3.) Ringworm of the Beard (*Tinea sycosis*).

1. *Ringworm of the Body* appears first as a rose-colored and slightly-elevated spot about the size of a half-dime, on which a bran-like desquamation of epidermis soon begins, accompanied by slight itching. This spot

gradually increases in size, but retains its circular form; and as it extends, the healing process commences at the center, so that the circular red patch is converted into a ring, inclosing a portion of healthy skin; and a ring thus formed may continue to increase till it reaches a diameter of four inches, or even more. It is apt to affect the face, the neck, the back, and the outside of the wrist. This form of ringworm frequently terminates spontaneously.

2. *Ringworm of the Scalp* usually occurs in children, especially when the nutrition is defective, or there is scrofulous taint in the constitution. It appears in the form of round, scaly, irritable patches on different parts of the head; and the irritation often occasions the formation of minute vesicles. The hairs at these spots become dry and twisted, and are easily extracted; and when the disease advances, they break close to the scalp if an attempt is made to extract them. The stumps, and the epidermis surrounding them, become covered with a characteristic grayish-white powder, consisting of the sporules of the fungus. The diseased parts are slightly elevated and puffy, and differ from the healthy scalp in color, being bluish or slate-colored in dark persons, and grayish-red or yellow in fair patients. The inflammation will last as long as the growth of the fungus continues; and even when the fungus dies spontaneously, as sometimes occurs, the affected spots remain permanently bald, the hair-bulbs having become obliterated.

3. *Ringworm of the Beard* occurs chiefly on the chin, hairy part of the cheeks, and upper lips of men; but it occasionally attacks the axillæ and pubic region. It commences like ringworm of the body, but when the deeper structures become affected, pustular indurations, resembling Acne (q.v.), occur, and the hair becomes readily detached. On examining the hairs under the microscope, it is seen that they are thickened; that their bulbs are partially disorganized; and that the medullary portion is atrophied.

The essential point in the treatment of all the varieties of true ringworm is to apply a preparation that will destroy the fungus; but before this can be done (in ringworm of the scalp and other hairy parts) the hair must be removed, if the disease has not already effected the removal sufficiently. To destroy and remove the fungus, lint dipped in a solution of sulphurous acid should be continuously applied. Painting the part with tincture of iodine may be tried, and the continuous application of table salt (chloride of sodium) is sometimes efficacious. The general health must be attended to.

Ringworm in the lower animals is common among young animals, is decidedly contagious, and communicable from man to the animals, and from them to man. Commencing with a small itchy spot, usually about the head or neck, or root of the tail, it soon spreads, producing numbers of scurfy circular bald patches. After washing with soap

and water, the spot may be touched lightly every day with a pencil of nitrate of silver, or a little of the red ointment of mercury, or some iodide of sulphur liniment may be rubbed in, or salt may be applied to the diseased part.

RINK, n. *rĭngk* [a form of RING 1: Ger. *ring,* the arena]: in *Scot.,* a course; a race; a straight line or mark of division; a long clear space or a frozen pond or any considerable piece of water, for the Scotch national game of curling; in *America,* a skating-ground on the ice prepared by clearing away the snow; a hard smooth surface artificially prepared for 'roller skating,' an indoor amusement in imitation of skating on ice.

RINSE, v. *rĭns* [F. *rincer,* Dan. *rense,* to cleanse: Icel. *hreinn;* Ger. *rein;* Goth. *hrains;* Dan. *reen,* pure, clean]: to cleanse by the introduction of water; to give a final cleansing to after washing, as to linen; to wash by laving. RINS'ING, imp.; N. a cleansing with a second water. RINSED, pp. *rĭnst.* RINSER, n. *rĭns'ẽr,* one who rinses.

RIOBAMBA, *rē-ō-vâm'bâ:* town of Ecuador, 100 m. s. from Quito, among the Andes, on an affluent of the Pastasa, a large branch of the Amazon. It is sometimes called New Riobamba, having been built instead of the former town of Riobamba, destroyed by an earthquake 1797, whose ruins are 9 m. distant at the foot of Chimborazo. Pop. about 16,000, mostly Indians.

RIO BRANCO, *rē'ō brân'kō:* river of Brazil, largest affluent of the Rio Negro, rising near the sources of the Orinoco, lat. about 3° n. long. about 64° w. It flows e. to long. 61° w., then s.s.w. to the Rio Negro, which it joins after a course estimated at 700 m. At its junction with the Negro it is more than a mile in breadth, and its lower course resembles a string of lakes connected by narrow canals. Its navigation is much impeded by rapids and waterfalls.

RI'O BRA'VO DEL NOR'TE, or RIO GRAN'DE. See BRAVO DEL NORTE.

RIO DE JANEIRO, *rē'ō dā zhâ-nā'ē-rō:* maritime province in s.e. Brazil; bounded s. and e. by the Atlantic; 26,530 sq.m. The coast on the n.e. is low and lined with lagoons; but in the s. the scenery of the shores is unusually beautiful. Mountain-ranges occupy the middle of the province, among which the peaks of the Organ Mountains, rising to 6,000 or 7,000 ft., are conspicuous. Of the rivers the Parahiba is the chief. The soil is fertile; principal productions are sugar, coffee, cocoa, cotton, rice, and maize. The province is traversed by a railway. The capital is Praia Grande or Nitherohi, which, including the district of St. Domingo, contains about 25,000 inhabitants. The city Rio de Janeiro is a municipality distinct from the province, though inclosed by it. Pop., province without the city, 1,227,600.

RIO DE JANEIRO.

RI'O DE JANE'IRO, generally called Rio: city, cap. of the Brazilian republic, and the largest and most important commercial emporium of S. America; on a magnificent harbor, 75 m. w. of Cape Frio, lat 22° 54′ s., long. 43° 15′ w. The harbor or bay of Rio de Janeiro, said, apparently with justice, to be the most beautiful, secure, and spacious bay in the world, is landlocked, being entered from the s. by a passage about a mile in width. It extends inland 17 m., and has an extreme breadth of about 12 m. Of its numerous islands, the largest, Governor's Island, is 6 m. long. The entrance of the bay, guarded on either side by granite mountains, is deep, and so safe that the harbor is entered without aid of pilots. On the left of the entrance rises the peak called, from its peculiar shape, Sugar-loaf Mountain; and all round the bay, the blue waters are girdled with mountains and lofty hills of every variety of picturesque and fantastic outline. The harbor is protected by a number of fortresses. The city stands on the w. shore of the bay, about 4 m. from its mouth. Seven green and mound-like hills diversify its site; and the white-walled and vermilion-roofed houses cluster in the intervening valleys, and climb the eminences in long lines. From the central portion of the city, lines of houses extend 4 m. in three principal directions. The old town, nearest the bay, is laid out in squares; the streets cross at right angles, are narrow, and are paved and flagged; and the houses, many of granite, are commonly two stories high. West of it is the elegantly built new town; and the two districts are separated by the Campo de Santa Anna, an immense square or park, on different parts of which stand an extensive garrison, the town-hall, the national museum, the palace of the senate, the foreign office, a large opera-house, etc. From a number of springs on and around Mt. Corcovado (3,000 ft. high, 3½ m. s.s.w. of the city), water is conveyed to Rio de Janeiro by a splendid aqueduct, supplying the fountains for the numerous squares. Great municipal improvements have been made; most of the streets are now as well paved as those of the finest European capitals; the city is abundantly lighted with gas and electricity; and commodious wharfs and quays are built along the water-edge. Rio de Janeiro contains several excellent hospitals and infirmaries, asylums for foundlings and female orphans, and other charitable institutions, some richly endowed; about 60 chapels and churches, generally costly and imposing structures, with rich internal decorations; and several convents and nunneries. In the College of Pedro II., founded in 1837, the various branches of a liberal education are efficiently taught by a staff of eight or nine professors; the Imperial Acad. of Medicine, with full corps of professors, is attended by more than 300 students; there is also a theological seminary. The national library contains 100,000 vols. The trade and commerce of Rio de Janeiro is

great, and annually increasing. The aggregate value of imports averages annually between $45,000,000 and $60,000,000; the total value of exports varies from $42,000,000 to $52,000,000. The chief exports are coffee, gold, diamonds, tobacco, and hides. The chief imports are silk, linen, cotton, and woolen goods, iron, etc. Of the coffee exports, 68 per cent. go to the United States. Steam communication with other ports of Brazil is frequent; European steamships arrive and depart almost daily, and there is telegraphic communication with Europe. On the proclamation of independence, 1822 (see BRAZIL), Rio de Janeiro became capital of the Brazilian empire, and is now the seat of the republican government. Pop. 750,000.

RI'O DE LA PLA'TA. See PLATA, RIO DE LA.

RIO GRANDE, *rē'ō grân'dā:* name sometimes given to upper course of river Parana (q.v.) in Brazil.

RI'O GRAN'DE: river of Senegambia (q.v.)

RI'O GRAN'DE, or RIO GRANDE DEL NORTE. See BRAVO DEL NORTE.

RIO GRANDE DE CAGAYAN, *rē'ō grân'dā dā kâ-gâ-yân':* the largest river of the island of Luzon, Philippines. It rises on the northeastern slope of Carabellos Sur, and flows north in a winding course to the China Sea. It drains a large territory, and has numerous tributaries, the chief of which are the Magat and the Chico de Cagayan; its valley is very fertile, the land being used mainly for the cultivation of tobacco. The river is navigable for vessels drawing 12 feet as far as Lal-ló, 13 miles from its mouth; and for light draft vessels for 200 miles in the wet season. Freshets occur at times with a rise of several feet in a few hours.

RI'O GRAN'DE DO NORTE, *dō nor'tã:* small maritime state of Brazil, in the n.e. angle of the country; bounded n. and e. by the Atlantic; 22,190 sq.m.; pop. about 268,300. The surface is flat along the shores, which are skirted by many dangerous shoals, but is hilly and mountainous in the interior. Salt is obtained in large quantity from salt lakes, and building-stone is abundant. The soil, generally sterile, is fertile on the river-banks. The principal crop raised is cotton, and large herds of horses and cattle are reared on the pastures, which are extensive. About 35,000 bags of cotton are exported yearly. The capital and principal town is Natal, on the Potenzi or Rio Grande river.

RIO GRANDE DO SUL, in full, SÃO PEDRO DO RIO GRANDE DO SUL, *sowng pā'drō dō rē'ō grân'dā do sôl:* maritime state of Brazil, the extreme south portion of the country; bounded n. and w. by the river Uruguay, s.w. by the republic of Uruguay, s.e. by the Atlantic; 91,310 sq.m. The central districts are occupied by a range of mountains, almost parallel to the Uruguay, and from which the land falls away into plains toward the

Uruguay on the w., and the Atlantic on the e. Between the mountains and the flat coast regions are the large lakes Merib and Des Patos—the latter, 175 m. long and about 40 m. broad. The great wealth of the state is in its flocks and herds; it is stated that 500,000 cattle, whose hides and flesh are preserved, are slaughtered here annually, while as many more are driven n. for ordinary consumption. A considerable area is now covered with crops of maize, beans, wheat, and potatoes; and the agricultural products, formerly of little account, now form one-eighth of the total exports. The gold mines of the province have yielded in one year 6,100 ounces, valued at about $120,000. Principal articles of export are beans, horns, hair, cattle and horse hides, grease and tallow, jerked or dried beef, tongues, mandioc flour, and maize. Of the most of these articles, the export has in a few years considerably more than doubled. Half of all the imports consists of cotton, woolen, and linen manufactures, coals, earthenware, and hardware from Great Britain. The principal towns are Porto Alegre (q.v.) and São Pedro (or Rio Grande). The latter, a prosperous and increasing seaport at the s. extremity of the Lake des Patos, and close to the sea (pop. 18,000), imports yearly goods to the value of $6,779,000; chief articles of export were, beef valued at $2,433,000; and hides, tallow, and hair, etc., $4,345,000. About 600 vessels of 134,000 tons enter and clear the port annually. Many German and Italian colonists have settled in the state, which is increasing its railway facilities. Pop. 968,250.

RIOJA, Francisco de, *frân-thēs'kō dā rē-ō'hâ:* Spanish lyric poet: b. Seville about 1600; d. Madrid Aug. 8, 1659. He studied first law and then theology. The minister Olivarez obtained for him a prebend in the cathedral of Seville, and then became royal historiographer, inquisitor at Seville, and lastly, inquisitor of the supreme tribunal of the holy office. The downfall of his patron involved his own: he was imprisoned, and only obtained his liberty after he had undergone a formal trial and completely established his innocence. Philip IV., whose favor he had regained, made him director of the royal library and councillor in the supreme court of the Inquisition. As a poet, he formed himself on the classic and Italian models, particularly Horace and Seneca; kept himself, in style and language, free from the tasteless eccentricities of his contemporaries, and thus preserved the true spirit of the lyric. His *Silvas* exhibit rich pictures of rural life, remarkable for their truth to nature. His works were published with a biography by D. Cayetano de la Barrera, *Poesias* (1868); and *Adiciones a las poesias de D. Francisco de Rioja* (1872). Consult Longfellow, *Poets and Poetry of Europe* (1843).

RIOJA, La: Argentina; (1) the capital of a province 118 m. by rail s.w. of Catamarca, at the foot of the Sierra Velasco, in the midst of vineyards and orange groves. Pop. (1900) 5,931. (2) A western province n. of San Juan and s. of Catamarca, with an area of 69,502 sq.m., divided into 18 departments. While in the e. and s. there are salt and sand deserts, it is well watered on the w., and agriculture and cattle rearing are important industries. Excellent wheat, fruits, and wine are produced. The climate is dry and healthful. Near Chilecito and Famatina are valuable gold, silver, and copper mines. Pop. 77,783.

RIOM, *rē-ōng':* small town of France, dept. of Puy-de-Dôme, picturesquely situated on a hill, 1,173 ft. above sea-level, 8 m. n.n.e. of Clermont. It is built of dark lava, and is a perfect treasure of domestic architecture, especially of the Renaissance. Linen, leather, and brandy are manufactured. Pop. 11,200.

RION, *rē-ōn'*, or Rioni, *rē-ō'nē*, from Phasis: a river of Colchis (Transcaucasia, Asiatic Russia), anciently regarded as the boundary between Europe and Asia. It was afterward held as the boundary line between Colchis and Asia Minor. It rises in a spur of the Caucasus (Moschici), and after receiving the rivers anciently called the Rhion, the Glaucus, and the Hippus, it falls into the Euxine near the ancient town of Phasis. In the early part of its course it was called the Boas. Its modern name is Rion or Rioni. Other rivers were sometimes confounded by ancient writers under the same name with this. The Phasis of Xenophon was the Araxes.

RIO NE'GRO, *rē'ō nā'grō:* one of the principal affluents of the Amazon, rising in an unexplored district of the south of the United States of Colombia (New Granada), flowing generally s.s.e., and joining the Amazon at Manaos, after a course estimated at 1,000 m. It receives from the n. the Cassiquiare (q.v.), giving communication between the Orinoco and the Amazon; also the Cababuri, Padaviry, Branco, and other large streams; from the s. comes its greatest affluent, the Vaupes. It is 1½ m. broad when it enters the Amazon.

RI'O NE'GRO: river of South America, forming the greater part of the boundary between the Argentine Republic and Patagonia. At its source, it is called by the natives Melly-roumey-co—i.e., *four small rivers*—from the fact that it is formed by four head-waters from the bosom of the Cordilleras. It is afterward called by the natives Courou-roumey-co, or Black River (Spanish Rio Negro), from the dark color of its waters, caused by the depth and narrowness of its channel. It flows first n.e., then e. and s.e. through the plains to the Atlantic in lat. 41° 3′ s., after a course of more than 700 m. Shoals and islands obstruct its channel, and it is navigable only 20 m. above its mouth.

RIONERO, *rē-ō-nā′rō:* large town of s. Italy, province of Potenza, 7 m. s. of Melfi. It produces grain, maize, pulse, and wine. The inhabitants are agriculturists and shepherds. There is a great trade in maple snuff-boxes, manufactured here. Pop. 12,000.

RIORDAN, *rē′or-dan,* PATRICK WILLIAM: American Roman Catholic archbishop: b. New Brunswick Aug. 27, 1841. He was educated at Notre Dame, Ind., and was graduated from Louvain, Belgium, in 1864. He then returned to Chicago, accepted the chair of theology at the Seminary of Saint Mary's of the Lake, and in 1868-71 was pastor of Saint Mary's church at Joliet, Ill. From 1871-83 he was in charge of Saint James' church, Chicago, and in the latter year was consecrated titular archbishop of Cabesa and was made coadjutor. He succeeded to the see of San Francisco in 1884.

RIORDAN, ROGER: American artist and author: b. Ireland, 1848; d. 1904. He studied art at the Art Students' League in New York, contributed as illustrator and writer on art subjects to various magazines, and served on the international jury of awards at the Paris Exposition, 1900. He published *Sunrise Stories, a Glance at the Literature of Japan; French Etchers;* and collaborated on the Catalogue of the Marquand collection.

RIOSECO, MEDINA DE, *mėh-dē′nâ dā rē′ō-sā′kō:* small town of Spain, province of Valladolid, 26 m. n.w. of the city of Valladolid; on two hills in a fertile district. In the middle ages, it was the center of considerable trade, but it has much declined in recent times. The chief church is that of Santa Maria, a beautiful Gothic edifice, richly decorated, and containing several excellent pictures. Here, 1808, a Spanish army, 50,000 strong, under Blake and Cuesta, was defeated, with a loss of 6,000 men, by 12,000 French troops, under Bessières, with the result that Joseph Bonaparte was placed on the throne of Madrid. After the defeat, the unresisting town was sacked with more than wonted barbarity. Pop. about 5,000.

RIOT, n. *rī′ŏt* [OF. *rioter,* to attack with weapons, to rob: prob. F. *riota,* to chide, to brawl: It. *riotta,* riot: Gael. *raoit,* indecent mirth]: disturbance of the peace by few or many persons: wild and noisy festivity; excessive and expensive feasting; tumult; uproar: V. to raise an uproar or disturbance of the peace; to feast with loose and noisy mirth; to run to excess in feasting or other sensual indulgence. RI′OTING, imp.: N. act of one who riots; revelling. RI′OTED, pp. RI′OTER, n. *-ėr,* one who disturbs by riots. RI′OTOUS, a. *-ŭs,* partaking of the nature of an unlawful assembly; seditious; uproarious; boisterous; noisy and licentious in festivity. RI′OTOUSLY, ad. *-lĭ.* RI′OTOUSNESS, n. *-nĕs,* the state or

quality of being riotous. TO RUN RIOT, to act or move without control or restraint.—*Riot* is a tumultuous disturbance of the peace by persons assembled by their own authority to execute some design in a violent and turbulent manner. By the statutes of most of the states there must be at least three offending actors. The wrongdoers must be engaged in some private purpose and not in a public attempt to overthrow or subvert the government by arms or force, which is treason. The action must be concerted, but need not be the result of previous deliberations. No distinction is made between the relative degrees of violence on the part of the rioters; all the participants are responsible for all that takes place. Mere presence alone is not sufficient to make a person guilty of engaging in a R.; he must in some way encourage it or take part therein. In some of the states statutes provide for compensation to parties whose property may be destroyed in consequence of mobs or riots, by the city or county in which such property is situated; provided the injury to or the destruction of the property was not aided or sanctioned by the carelessness or negligence of the owner. It is a crime for a person present at a R. to refuse to aid in suppressing it when ordered to do so by a duly authorized public officer. In all the states the militia may be ordered out to suppress a R. The crime of engaging in a R. is punishable by imprisonment, in most of the states from one to five years and also by a fine.

RIOUW: Netherlands residency or govt. in the Eastern Archipelago; comprising, since Siak and dependencies were taken from it, the peninsula of Tandjong Pinang, the Lingga-Riouw Archipelago, part of the coast of Sumatra n. of Djambi, and the adjoining kingdom of Indragiri; also the Tambilan, Anambas, and Natuna Islands; about 18,000 sq. m. Pop. (est.) of the residency, 100,000—including 200 Europeans, 30,000 Chinese, and the rest natives.

The islands of the archipelago are mountainous, the peak of Lingga rising to 3,712 ft. Many of them are covered with heavy timber and dense underwood. As far as known, the prevailing rocks are granitic and sandstone. Gold is found in Lingga, and tin was formerly extensively wrought; but the richer mines of Sinkep and the Carimon Islands, in the s. entrance of the Strait of Malacca, now yield the largest amount of that ore. Coal also is found in the Riouw-Lingga Islands.

The climate is not considered unhealthful, though at times the heat is intolerable. The chief products are sago, pepper, damar resin, gambir, gutta-percha, ratans, cotton, fruits, and many varieties of fine timber. Edible nests are abundant, and the waters swarm with fish. Agar-agar, tripang or bêche-de-mer, and shell-fish are largely collected. The native Malays gain a living chiefly by fishing, and the Chinese have extensive *Uncaria gambir* and pepper gardens. Imports, about $2,000,000

a year; exports, rather less. The industries are manufacturing gambir, distilling arrack, weaving silks, shipbuilding, wood-cutting, tile and brick making, together with extensive fisheries. The original inhabitants are Malays, more numerous in Lingga than in the other islands. The strangers are Europeans in the pay of the Netherlands colonial govt., Chinese, Buginese, and Javans. The town is at the n.w. end of Tandjong Pinang, 54′ 4″ n. lat., and 104° 26′ 30″ e. long., in a beautiful bay where there is safe anchorage: pop. 10,000.—See *Journal of the Ind. Archip.*, I.; Crawford's *Descriptive Dict.*; *De Residentie Riouw*, by De Hollander; and the official reports on the Dutch E. Indies.

RIP, v. *rĭp* [Icel. *hrifa*, to scrape, to snatch: Dan. *oprippe*, to rip up: Dut. *roopen*; Ger. *raufen*, to pluck: AS. *rypan*, to spoil]: to separate the parts of a thing by cutting or tearing; to cut or tear open or off; to tear up for disclosure or alteration: N. a place torn: a rent caused by part of a seam giving way. RIP′PING, imp. RIPPED, pp. *rĭpt*. RIP′PER, n. *-pėr*, one who rips. TO RIP UP OLD SORES, to bring to recollection old grievances and differences.

RIP, n. *rĭp* [Low Ger. *rif* or *rift*; Ger. *gerippe*, a skeleton]: anything worthless or thoroughly vicious; a *rip* of a horse is a thin worn-out horse; a morally ill-conditioned person.

RIPARIAN, a. *rī-pā′rĭ-an* [L. *ripārĭŭs*, that frequents the banks of rivers—from *rĭpa*, the bank of a stream]: pert. to the bank of a stream. RIPARIAN RIGHTS: see RIVER.

RIPE, n. *rīp* [Dut. *rijp*; Ger. *reif*, ripe]: brought to perfection or maturity; mature; mellow; fit for use; ready; prepared: V. in *OE.*, to ripen; to mature; to make ripe. RIPE′LY, ad. *-lĭ*. RIPE′NESS, n. *-nĕs*, full growth; maturity; fitness for use; complete suppuration, as of an abscess. RIPEN, v. *rī′pn*, to become ripe; to mature; to grow ripe, as grain or fruit; to bring to completeness or perfection. RI′PENING, imp. RI′PENED, pp. *-pnd.*—SYN. of 'ripe': mature; complete: finished; mellow.

RIPE, v. *rīp* [Icel. *rifa*; Dan. *oprippe*, to rip up]: in *Scot.* and *OE.*, to rake; to probe; to search or examine; to investigate. RI′PING, imp. RIPED, pp. *rīpt*.

RIPHEAN, a. *rī-fē′an*: a term formerly applied to certain mountains in the north of Asia.

RIPIDOLITE, n. *rī-pĭd′ō-līt* [Gr. *rhipis* or *rhipida*, a fan; *lithos*, a stone]: a composition of an olive-green color, occurring in tabular crystals, often united in comb-like or fan-like groups.

RIPIENO, a. *rĭp′ē-ā′nō* [It.—from L. *re*, again; *plēnus*, full]: in *music*, a term meaning 'full.'

RIPLEY, *rĭp'lĭ*, ELEAZAR WHEELOCK: soldier: 1782, Apr. 15—1839, Mar. 2; b. Hanover, N. H.; son of the Rev. Dr. Sylvanus R. He graduated from Dartmouth College 1800, became a lawyer in Portland, Me., was a member of the Mass. legislature 1810 and of the state senate two years later. He served through the war of 1812; entering as lieut., rising to the rank of brig.gen., and receiving the brevet of maj.gen.; and rendered distinguished service at the battles of Chippewa and Niagara, and the defense of Fort Erie, for which congress presented him with a gold medal. He resigned his commission 1820, became a lawyer in La., served in the state senate, and was member of congress 1834 till his death, which resulted from wounds received in the war of 1812. He died at his home in Louisiana.

RIP'LEY, GEORGE, LL.D.: scholar, critic, and editor: 1802, Oct. 3—1880, July 4; b. Greenfield, Mass.; son of a justice and legislator; his mother was related to Benjamin Franklin. He graduated at Harvard 1823, and, after a divinity course, was first pastor of a Unitarian church on Purchase and Pearl sts., Boston. He was a leader of the so-called transcendentalists, and one of the first editors of the *Dial*. In 1841 he gave himself to the Brook Farm socialistic experiment, teaching philosophy and doing manual work, till the failure of the enterprise 1847. Afterward, he was engaged in journalistic work, especially as literary editor of the *Tribune*. His critiques were noted for learning, penetration, and geniality. Besides very many reviews and essays in monthlies and quarterlies, he edited a series of volumes entitled *Foreign Standard Literature*, beginning 1838. In 1857, with Charles A. Dana, he undertook the editorship of the *New American Cyclopedia*, finished 1863, and revised 1873–76 as the *Amer. Cyc.* His life by O. B. Frothingham was published in the *Amer. Men of Letters* (1882). He died in New York.

RIPON, *rĭp'on:* city, in Fond du Lac co., Wis.; on the outlet of Green Lake, and on the Chicago Milwaukee and St. Paul and the Chicago and Northwestern railroads; 20 m. w. by n. of Fond du Lac, 86 m. n.w. of Milwaukee. It is in an agricultural region, has excellent water-power, ships large quantities of wool and livestock, and manufactures carriages, wagons, and flour. It is the seat of Ripon College (Congl.); was settled in 1844 by the 'Wisconsin Phalanx,' based upon the principles of Fourier (q. v.), and claims to have originated the Republican party. Pop. 3,980.

RIP'ON: municipal borough, in the w. Riding of Yorkshire, England, 23 m. n.w. of York. The market-place, to which the four principal streets lead, is spacious, surrounded by good houses and shops, and has in its centre an obelisk 90 ft. high. R. is a bishop's see. The cathedral, founded 1109–14 is cruciform, surmounted with two uniform towers, 110 ft. high at the w. end, also by a centre tower: it is esteemed one of the best

proportioned churches in the kingdom. Trinity Church, built 1826, is a fine cruciform edifice in Early English. There are other places of worship, two hospitals, and important schools. Principal branches of industry are machine-making, tanning, and malting. About two m. from R. are the famous ruins of Fountains Abbey, adjoining the grounds of Studley Royal, seat of the Marquis of Ripon.—Pop. 8,300

RIPPLE, v. *rĭp′pl* [Fris. *rebbel;* Dan. *ribbel*, a frame with iron teeth, through which thrashed straw is drawn, to save any remnants of corn: Ger. *riffel*, a ripple; *riffeln*, to strip flax]: to pluck off the seed-capsules of flax by drawing the straw through a fixed iron comb: N. a kind of comb or frame with long wire teeth, through which flax-plants are passed, to remove the capsules containing the seeds. RIPPLE-GRASS, a species of plantain.

RIPPLE, n. *rĭp′pl* [AS. *hrympelle;* O. Dut. *rimpel*, a wrinkle: OHG. *hrimfan*, to wrinkle]: the little curling waves on the surface of water: V. to ruffle the surface of water; to curl on the surface of water. RIP′PLING, imp.: N. the breaking of ripples on the shore, or the noise of it. RIP′PLED, pp. *-pld.* RIP′PLINGLY, ad. *-plĭng-lĭ.* RIPPLE-MARKS, marks made on the sand of a sea-beach by the receding tide: in *geol.*, similar marks have been observed on the surface of sandstones of all ages. They are deemed generally as indicating that the deposition of the bed on which they occur took place on a sea-beach, or under water not more than ten ft. deep. Recent ripple-marks have, however, been observed at a depth of 60 ft., and there is reason to believe that mud and sand may be disturbed at much greater depths by currents of water. Loose sand also may be driven by the wind into ripple-waves, that cannot be distinguished from those produced by the receding tide.

RIPRAP, n. *rĭp′răp:* in *civil engin.*, a foundation of stones thrown together without order, as in deep water or on a soft bottom.

RIPT, v. *rĭpt*: another spelling of RIPPED: see RIP 1.

RISE, v. *rīz* [Icel. *risa;* Goth. *urreisan;* AS. *arisan*, to rise up: Dut. *rijsen*, to rise up: OHG. *risan*, to move up]: to ascend; to move upward; to get up, as from a recumbent or sitting position; to get up from rest or repose; to spring or grow; to begin to appear or to exist; to increase; to swell in quantity; to advance, as in price; to gain elevation in position; to break forth; to be elevated above the surface; to ascend, as ground; to have its source in; to commence; to make insurrection; to make a hostile attack; to be roused; to close a sitting, as a court of justice or parliament; in *Scrip.*, to be revived from death: N. act of rising; ascent; elevation; first appearance, as of the sun in the east; source; beginning; increase; advance, as in value, in rank, or in prosperity. RI′SING, imp.: ADJ. mounting; advancing; appearing above the horizon; increasing, as

in wealth or position; reviving from death: in *her.*, applied to a bird represented as opening his wings about to take flight: N. act of getting up from any recumbent posture; act of ascending; a tumor; ascent; appearance of a star above the horizon; act of reviving from the dead; an insurrection against government; sedition; the close of the sitting of a court. RISING OF PARLIAMENT, prorogation of parliament. ROSE, pt. *rōz*, did rise. RISEN, pp. *rĭz'n*. RISER, n. *rī'zẽr*, one who rises. —SYN. of 'rise, v.': to get up; spring; grow up; ascend; mount; climb; scale: move upward; break out; be excited; be produced; appear; begin;—of 'rising, n.' appearance; tumult; insurrection; resurrection; sedition; swelling.

RISHI, *rĭsh'ī* [from obsolete Sanskrit *r'ish*, see, kindred with *dr's'-*, *δερκ'-*]: title given to the poets of the Vedic hymns, as they were supposed to have 'seen,' or, in other words, received, the Vedic hymns from the Deity through the sense of sight. The R'ishis were therefore the oldest poets of India, and the word R. itself becomes thus even identified with Vedic poetry. Later, however, the title R. was given to renowned authors, though not considered as inspired by a deity; e.g., to the authors of the Vedic Kalpa.—Compare Goldstücker, *Pân'ini*, etc., p. 64, ff.

RISIBLE, a. *rĭz'ĭ-bl* [F. *risible*—from L. *risibĭlĭs*, laughable—from *rīsus* laughter; *ridĕō*, I laugh: Sp. *risible;* It. *risibile*, risible]: having the faculty or power of laughing; capable of exciting laughter; prone to laugh. RIS'IBLY, ad. *-blĭ*. RIS'IBIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being risible; proneness to laugh.—SYN. of 'risible': amusing; ridiculous; ludicrous; laughable.

RISING IN THE AIR, or LEVITATION: act ascribed according to a belief (prevalent in the middle ages) that the bodies of holy persons were sometimes lifted up and suspended in the air while those persons were in a religious ecstasy. Calmet states in his work on Apparitions that this phenomenon might be produced by the fervor of the Holy Spirit; by the ministry of good angels; or by a miraculous favor of God. Numerous instances are recorded in the *Acta Sanctorum*. It is reported that St. Philip of Neri, in his religious ecstasies, was elevated in the air, sometimes almost to the ceiling of his room, and this quite involuntarily; he tried in vain to hide it from the knowledge of those present, for fear of attracting their admiration. St. Ignatius de Loyola, it is declared, was sometimes raised up from the ground to the height of two ft., while his body shone like light. St. Robert de Palentin also is said to have risen from the ground sometimes to the height of a foot and a half, to the astonishment of his disciples and assistants. In the life of St. Dunstan it is stated that, a little time before his death, as he was going upstairs to his apartment, accompanied by several persons, he was observed to rise from the ground; and as all present were astonished

at the circumstance, he took occasion to speak of his approaching death. In a recent biography of Girolamo Savonarola, it is also stated that while that martyr was in prison, shortly before his execution, he was observed once, while in prayer, raised from the ground, and was seen distinctly suspended in the air for a short period. These relations account for the frequency with which representations of saints are exhibited in an aërial position in mediæval paintings and works of art. This belief falls in with one of the alleged phenomena of modern Spiritism (q.v.).

RISK, n. *rĭsk* [Sp. *risco*, a bare steep rock: F. *risque;* It. *risico;* Sp. *riesgo*, risk: comp. Bret. *riska*, to slip or slide]: exposure to injury or loss; danger; hazard (see WARRANTY: CARRIERS: INSURANCE): V. to expose to the chance of injury or loss; to hazard; to peril. RISK'ING, imp. RISKED, pp. *rĭskt*. RISK'ER, n. *-ẽr*, one who risks. RISK'FUL, a. *-fûl*, or RISK'Y, a. *-ĭ*, attended with danger; hazardous. TO RUN A RISK, to incur hazard; to encounter danger. TO TAKE A RISK, to assume danger; to insure.—SYN. of 'risk, n.': hazard; jeopardy; danger; peril; exposure; venture; liability.

RISOTTO, *rē-zŏt'tō:* Italian dish, consisting chiefly of rice. Onions are shredded into a frying-pan with plenty of butter, and they are fried together until the onions become very brown, and communicate their color to the butter. The butter is then run off, and to this is added some rich broth, slightly colored with saffron, and the whole is thickened with well boiled rice, and served up instead of soup, at the commencement of a dinner.

RISSOLE, n. *rĭs'sōl* [F. *rissoler*, to fry meat till it is brown: Dan. *riste*, to fry]: culinary preparation used as an *entrée*. It consists of meat or fish of any kind finely minced and made into small forms, which are then coated with a very thin crust either of pastry or of bread-crumbs mixed with yolk of egg, and fried.

RISTORI, *rēs-tō'rē*, ADELAIDE: famous Italian tragic actress: was born in 1821 at Cividale in Frioul. Her parents were strolling players, and she almost began life in the theatre. At the age of 14, she played in *Francesca da Rimini*, and in a few years became the leading Italian actress. Her talents, her beauty, and her grace made her a universal favorite. In 1847, her marriage with Marquis Capranica del Grillo (died 1861) temporarily interrupted her dramatic career; but after two years, she returned to the stage, and appeared at Rome 1849 in Alfieri's tragedy of *Myrrha*. But the French attack on the city caused her to desert the theatre for the hospital, where she employed herself assiduously in nursing the wounded. After having acted in 1850 and succeeding years at Rome and Turin in various characters of Alfieri with immense applause, she presented herself before a French audience 1855, when Rachel was in the height of her fame, a proceeding considered as a challenge by the first Italian actress to the first French ac-

tress. Even at Paris she obtained a triumph, her genius creating irrepressible enthusiasm. Without the extreme sympathetic sensibility of Rachel, she surpassed her in vivacity and expansion. She appeared with great success in the United States, etc. Died Oct. 9, 1906.

RISUS, n. *rī'sŭs* [L. *rīsus,* laughter: It. *riso;* F. *ris,* laughter]: a laugh; laughter. RISUS SARDONICUS, *sâr-dŏn'ĭ-kŭs,* in *med.,* the peculiarly horrible expression of countenance observed in cases of tetanus, so called because supposed to be produced by the eating of a species of ranunculus growing in *Sardinia.*

RITARDANDO, a. *rē-târ-dăn'dō* [It.]: in *mus.,* a direction to play and sing slower and slower.

RITCHIE, *rĭch'ĭ,* ANNA CORA (MOWATT): b. Bordeaux, France, July 28, 1819; d. July 28, 1870. Her childhood was passed in France, but in early youth she removed to New York, and soon afterward eloped with a lawyer named James Mowatt. She gave much attention to private theatricals, and when her husband lost his property she gave public readings. She appeared as an actress, June, 1845, taking the part of Pauline in *The Lady of Lyons.* She also wrote plays entitled *Fashion,* and *Armand,* in which she appeared in England and the United States. On the death of her husband, 1851, she returned to this country, and 1854 married William F. Ritchie. From 1860 till her death she resided in Europe. Among her publications were *Autobiography of an Actress,* (1855); *Twin Roses* (1857); *Italian Life and Legends* (1870).

RITCHIE, ANNE ISABELLA THACKERAY: English author: b. London, 1837. She is the eldest daughter of William Makepeace Thackeray (q.v.) and was educated at Paris and Kensington and in 1877 was married to Richmond Ritchie. Her first literary work was published in the Cornhill Magazine while her father edited that periodical. In 1863 she published *The Story of Elizabeth,* which met with success. Since that time she has published fiction, biography and literary reminiscences, among which may be named: *The Village on the Cliff* (1865); *To Esther, and Other Sketches* (1869); *Old Kensington* (1873); *Toilers and Spinners* (1873); *Bluebeard's Keys* (1874); *Miss Angel* (1875); *Anne Evans* (1880); *Madame de Sevigné* (1881); *A Book of Sibyls* (1883); *Mrs. Dymond* (1885); *Records of Tennyson, Ruskin and Browning* (1892). The biographical edition of Thackeray's works was edited by her, and her prefaces and notes contain a partial substitute for an authoritative biography against which Thackeray left a prohibition. Her *Chapters from Some Unwritten Memoirs* (1895) is a work of autobiographical character.

RITE, n. *rīt* [F. *rit* or *rite,* a rite—from L. *rītus,* a religious usage or ceremony: It. *rito*]: a formal act of religious worship; external observance; form; ceremony.

RITUAL, a. *rĭt'ū-al*, pert. to rites, or prescribed by them: N. a book of rites or services (see below). RIT'UALLY, ad. *-lĭ*. RIT'UALISM, n. *-ĭzm*, observance of prescribed forms in religious services; excessive or prominent observance of forms (see below): sometimes, in controversy, opposed to *spiritual worship*. RIT'UALIST, n. *-ĭst*, one who makes much of ritual, or external forms in worship; one unduly devoted to mere external forms in worship. RIT'UALISTS, n. plu. *-ĭsts*, extreme party in the Chh. of Eng. which seeks both in doctrine and ritual to assimilate it to the Rom. Cath. Chh.: see RITUALISM, below.—SYN. of 'rite': ceremony; form; observance.

RITE, *rīt:* external sign or action employed in religious use, and designed either to express or to excite a corresponding internal religious feeling; e.g., the uplifting or outstretching the hands in prayer, the imposition of hands in blessing, etc. The ancient Jewish religion abounded with rites and ceremonies, and through their excessive multiplication in the religions of the Gentiles, religion degenerated almost entirely into outward form. A marked distinction in this respect is drawn by the Lord Jesus (John iv. 23) between the old and the new law, which one class of Christians have interpreted as a condemnation of all external ceremonial, while even those who contend for retention of ceremonies in Christian worship require that their use should always be accompanied and elevated by the corresponding internal spirit. All forms of religion use rites to some extent in worship: the debate is as to the proper limit in their use. The great ground of difference in the Puritan controversy in England and in the corresponding disputes in continental churches was the lawfulness of certain ceremonies. See GENUFLEXION; PURITAN.

The name rite is sometimes used to signify the aggregate of all the ceremonies used in a particular religious office, as the 'rite' of baptism or of the Eucharist. In a still wider sense, it is used of the whole body of distinctive ceremonial, including the liturgy employed by a particular community of Christians; e.g., the 'Roman rite,' the 'Greek rite,' the 'Syrian rite,' the 'Armenian rite,' the 'Coptic' or the 'Slavonic rite.'

RITENUTO, *rē-tĕn-ô'to* [Ital. kept back]: in *music*, a term implying that the speed of the movement is to be diminished.

RITES, CONGREGATION OF: a commission or standing committee of cardinals of the Roman Catholic church, instituted in the 16th century by Sixtus V. Its function is to exercise supervision throughout the entire church over all ecclesiastical rites and ceremonies, in particular those belonging to the Mass, with a view to prevent the introduction of novelties without express approval, and to maintain unaltered the usages sanctioned by the tradition of the Fathers and the prescriptions of the rubrics.

RITORNELLE, n. *rĭt'ŏr-nĕl*, or RITORNELLO, n. *rĭt'ŏr-nĕl'lō* [F. *ritourncllc;* It. *ritornello*, dim. of *ritorno*, return; *ritornare*, to return (see RETURN)]: in *music*, in its original sense, a short repetition like that of an echo, or a repetition of the closing part of a song by one or more instruments. The same term has, by later usage, been applied to all symphonies played before the voices begin which prelude or introduce a song; as well as the symphonies between the members or periods of a song.

RITSCHL, *rĭtsh'l*, ALBRECHT, D.D., LL.D., PH.D.: German theologian: b. 1822; nephew of Frederic William R., philologist. In 1855 he was appointed curator of the library and museum of the Univ. of Bonn; 1860 prof. of theol.; and 1864 prof. in the Univ. of Göttingen. Besides many papers on religious questions, he has published *The Gospel of Marcion and the Gospel of St. Luke* (1846)—Marcion admitting only the latter, and changing it. In this work, R. followed the critical method of Bauer; but in 1850 his *Origin of the Ancient Catholic Church* opposed the principles of the school that he had favored. Other works are: *The Relation of the Confession to the Church* (1854); *Critical History of the Doctrine of Justification and Reconciliation* (English translation, Edinburgh 1872); *Concerning Conscience* (1876): *History of Pietism* (1880–86, vol. I., in the Ref. Church—II. III., in the Lutheran); *Instruction in the Christian Religion;* and *Theology and Metaphysics.* His theology is based on a theory of cognition that recognizes phenomena only; and to this his rejection of traditional doctrine is traced in Stahlin's *Kant, Lotze, and Ritschl*, translated by D. W. Simon (1889). Died 1889, March 20, at Göttingen.

RITSCHL, FRIEDRICH WILHELM: one of the first (perhaps the very first) classical philologists of modern times: 1806, Apr. 6—1876; b. Grossvargula in Thuringia. He studied at Leipzig under Hermann, and 1826–29 at Halle. In 1832, he was called to Breslau as extraordinary prof.; two years afterward he became ordinary prof; and 1839 accepted an invitation to Bonn as prof. of classical literature and rhetoric. The Prussian govt. conferred on him the rank of privy-councillor 1856. His first literary works were in reference to the Greek grammarians, as the edition of Thomas Magister (Halle 1832), the acute and penetrating treatise, *De Oro et Orione* (Bresl. 1834), and the richly elucidatory *Die Alexandrin. Bibliotheken und die Sammlung der Homerischen Gedichte durch Pisistratus* (Bresl. 1838); but by far his greatest work is his edition of Plautus (Bonn, 1848–53), executed with the richest critical apparatus, and accompanied by a comprehensive *prolegomena* on the Plautinian metres. The work secured for him a splendid reputation. Among the numerous productions of R. preparatory to this *chef-d'œuvre*, most important is *Parerga Plautina et Terentiana* (Leip. 1845). Subsequently his literary activity turned to the systematic treatment of Latin inscriptions, with the view of illustrating the history of

the Latin language. By his numerous works in this department (published 1851–62), R. has thrown more light on the successive phases of the language than any other individual. Besides these works, R. contributed many learned dissertations to the programs of the Univ. of Bonn, in *Transactions* of the Archæological Institute of Rome, and in the *Rheinisches Museum für Philologie*. On the 25th anniversary of his appointment to Bonn, there began to be published *Symbola Philologorum Bonnensium in Honorem Frid. Ritschelii* (1864–67). In 1867, R., 30 of whose pupils were then professors in German universities, was appointed foreign associate of the French Acad. of Inscriptions and Belles Lettres.

RITSCHLIANISM, *rĭtsh'lĭ-ăn-ĭsm :* system of Albrecht Ritschl (q.v.), German theologian. Ritschl's distinctive theological views are most fully presented in his great work on the Christian doctrine of justification and reconciliation. In philosophy he is of the school of Lotze (q.v.), holding a system of subjective idealism. He doubts the possibility of demonstrating God to the speculative intellect, but believes that God is revealed to man through the religious consciousness. God is to be thought of chiefly as love, even his justice and righteousness being substantially identical with his grace. Metaphysical speculations in regard to God's existence as absolute, unconditioned, and self-determining, or in regard to a distinction and unity of three persons in the Godhead, or of two natures, divine and human, in the person of Christ, are to be disregarded as valueless and unprofitable, Christ is held to be divine, holding a unique relation to the church founded by his earthly life and work. The atonement secures reconciliation of man with God and freedom from the sense of guilt, not by Christ's vicarious suffering of the penalty due to sinful men, but by his perfect fulfilment of the divine will, and his patient, loving, and unfaltering endurance even unto death. The Christian's justification is witnessed by his possessing the spirit and living the life of Christ—a life of trust in the divine providence, of humility, of patient endurance of suffering or trial, of prayerfulness, and of faithful doing of the will of God, including faithfulness to one's calling as part of the divine will and contributing to build up the kingdom of God. Great importance is attached to the church as the community in which alone men can have reconciliation with God and freedom from the sense of guilt, can be enabled to act from motives of love, and can realize that human and divine fellowship of perfect love which is the kingdom of God. The Ritschlian system gives great prominence to the practical, ethical, and social aspects of Christianity. Its author has been termed 'an eclectic mediating theologian,' as standing between the rationalistic and orthodox parties within the church. The system has had a wide influence over a large school of Christian thinkers, teachers, and preachers in Germany.

RITTENHOUSE, *rĭt'tn-howss*, DAVID, LL.D.: mechanician, mathematician, and astronomer: 1732, Apr. 8—1796, June 26; b. Roxborough, Penn.; son of a Mennonite preacher who was the first paper-maker in this country. At 17 yrs. of age he made a wooden clock, and, two years later, became a maker of clocks and mathematical instruments in Norriton, achieving great reputation. A constant student, he independently discovered the method of fluxions, and educated himself in the ancient languages. He invented a compensating pendulum and a metallic thermometer, and made improved orreries, which were sold at $1,500—$2,000 to institutions. His services were in requisition to determine state boundaries accurately. In 1769, he made even better observations on the transit of Venus than the royal astronomers of Europe; and, the same year, studied the transit of Mercury. The following year, he determined the orbit of a comet. During the revolutionary war, he was pres. of a committee of safety, and his engineering and inventive genius was variously exercised. In 1776, he was member of the Penn. assembly and constitutional convention; 1777–89, state treasurer; 1779–82, prof. of astron. in the Univ. of Penn.; 1792, director of the mint. He succeeded Franklin, 1790, as pres. of the Amer. Philos. Soc., to whose vols. he contributed many papers. His *Oration on Astron.* was pub. 1775. James Renwick wrote his life, in Sparks's *Amer. Biog.* He died in Philadelphia.

RITTER, *rĭt'tĕr*, HEINRICH: German philosopher: 1791–1869; b. Zerbst. He studied theology at Halle, Göttingen, and Berlin, 1811–15, and in 1824 was created prof. extraordinarius at Berlin Univ. In 1835, he accepted a call to the univ. at Kiel, and went thence 1837 to Göttingen. R. owes his literary fame especially to his profound works on the history of philosophy, giving analyses of leading ancient and modern systems, and tracing their relations to one another. He was not a partisan of any philosophical school, but a critic of all.

RIT'TER, KARL: illustrious geographer: 1779, Aug. 7—1859, Sep. 28; b. Quedlinburg, Prussia. He studied in Halle, was nominated 1820 prof. extraordinarius of geog. at Berlin Univ., became subsequently member of the Acad., and director of studies of the Milit. School. With R., as the founder of general comparative geography, begins a new epoch in geographical science. His chief works are: *Die Erdkunde im Verhältnisse zur Natur und Geschichte des Menschen* (Geography in its Relation to Nature and the History of Men), 17 vols. Berl. 1822–54: in 4 parts, 1. Introduction, and E. Asia, 5 vols., containing Middle Asia, High Asia, Siberia, China, and India, vols. II.—VI.; 2. W. Asia, 5 vols. (VII.—XI.); 3. Arabia (.XII—XIII.); 4. The Sinai Peninsula, Palestine, Syria (XIV.—XVII.), with four indexes, and an Atlas of Asia. Introduction to an Essay on a more Scientific Treatment of Geography (Berl. 1852); *Europa, ein geographisch., historisch., statistisches Gemälde* (Europe, a Geo-

graphical, Historical, Statistical Picture), 2 vols. Frankf. 1807; *Die Stupas, oder die architect. Monumente, etc.* (The Stupas, or the Architectural Monuments on the Indo-Bactrian Royal Road, and the Colossus of Bamyan), Berl. 1838. Many of his antiquarian and historico-antiquarian researches are in the *Monatsberichten* of the Berlin Geog. Soc. and in the *Zeitschrift für allgemeine Erdkunde, etc.*

RITUAL: see under RITE..

RIT'UAL: name of one of the service-books of the Roman Church, containing the prayers and order of ceremonial in the administration of certain sacraments and other offices of the church. The ceremonial of the offices of the Roman Church administered by bishops is in the books entitled *Pontificale* and *Ceremoniale Episcoporum*, while the priestly offices are detailed in the Ritual. In its present form, the R. dates from the Council of Trent, which directed a revision of numerous and varying rituals then in existence. Paul V., 1614, published an authoritative edition, frequently reprinted, and of which a further revision was issued by Benedict XIV. Besides the Roman R., there are many diocesan rituals, some of which are of much historical interest. In the Greek Church, as in the other eastern communions, the R. forms part of the general collection (which contains also the Eucharistic service) entitled *Euchologion*. In the Anglican and the Prot. Episc. Church, also, the *Book of Common Prayer* may be said to contain the R. The most approved commentary on the Roman R. is that of Barrufaldo (2 vols. Florence 1847).

RITUAL LAW, that portion of the law of Moses which prescribes the ceremonies of public religious worship, the manner of making trespass offerings, the procedure for the discovery of leprosy, for the purification of women after childbirth, the discrimination of things clean and unclean, etc. The ritual laws of the Hebrews are contained mostly in the books Exodus, Leviticus, Numbers and Deuteronomy.

RITUALISM.

RIT'UALISM: popular but inaccurate name for the remarkable increase of ceremonial in the Church of England since 1863. In a general sense it denotes, in the United States and in Britain, the theory of the church which demands a certain high degree of symbolism for proper conduct of worship or for adequate setting forth of Christian doctrine; also in loose popular usage it denotes any observance of elaborate ritual in divine service. It may be considered a development of Tractarianism, though it was not contemplated by the authors of that movement, whose aim was rather to disseminate doctrines than to introduce ritual changes. Its collateral causes may be said to be: (1) The great advance of æsthetic taste, and the increased cultivation of the fine arts in the service of religion. (2) The extended study by the clergy of ancient liturgies, and the connection discovered to exist between them and the offices of the English Church, therefore also with those of the Prot. Episc. Church in this country. With the spread of High Church principles, certain changes in the mode of conducting divine service had been introduced by the clergy, which, though unpopular at first, were widely adopted, and to a certain point, had received the sanction of the law. But till about 1863, the restored church with low and open benches—the separated chancel—the altar-table with coverings of different color according to the ecclesiastical seasons, and candlesticks, and a cross upon or over it—choral services, and weekly celebration of the communion, were all that had been attempted. To these comparatively small alterations, important additions have since been made—viz. (1) Special vestments at celebration of the holy communion, and at certain other times; viz., for the celebrant, an alb and stoles, of different color, and chasuble; for the assisting ministers, albs with tunicles, according to the seasons: at other times, a cope is worn instead of a chasuble. (2) Lighted candles on the altar at holy communion. (3) Incense burned either in a 'thurible' or in a standing vessel. (4) The mixing of water with wine for the communion. (5) The use of wafer-bread. (6) Elevation of the elements either during or after consecration. (7) The attendance of non-communicants at the holy communion. (8) Processions with crosses, banners, and vested attendants.

These innovations are defended by their promoters on the grounds of (*a*) Law, (*b*) Doctrine, (*c*) Expediency.

(*a*) The rubric at the end of the calendar in the Anglican Book of Common Prayer enacts 'that such ornaments of the church and of the ministers thereof at all times of their ministration shall be retained and be in use as were in this Church of England by the authority of parliament in the second year of the reign of King Edward VI.' The judicial committee of the privy Council in the case of Westerton *v.* Liddell (1857), ruled that 'ornaments' here means, 'all articles used in divine service;' that the words 'by authority of parliament,'

etc., refer to the first Prayer-book put forth in that reign (1549); and that 'the meaning of the rubric, as of the previous statute of Elizabeth, the language of which it adopts, is, that the same dresses, utensils, and articles which were used under the first Prayer-book of Edward VI. may still be used.' Now, the first Prayer-book of Edward VI. prescribes that at the time of the communion 'the priest that shall execute the holy ministry shall put on him a white alb plain with a vestment, i.e., a chasuble, or cope;' and the assistants 'likewise the vestures appointed for their ministry, that is to say, albs with tunicles:' it is therefore inferred that the above are the only legal vestments in which the holy communion should be celebrated. To this it is objected (1) That the word 'retained' can refer only to such vestures as were in use till the time of the last publication of the rubric—viz., the surplice in parish churches, and copes in cathedrals. (2) That the rubric, when first inserted under Elizabeth, was limited by the Injunctions and Advertisements of that reign, which aimed only at the restoration of the surplice. (3) That whatever be the intention of the rubric, it has been so long obsolete that it is absurd to revive it. It is rejoined (1) That the word 'retained' must have the same meaning that it had in the rubric of Elizabeth, in which it first occurs. (2) That the Injunctions and Advertisements were not of supreme authority, and were intended only to help toward restoring a decent uniformity in divine worship. (3) That the fact that a law has become obsolete does not invalidate its force. The same reference of the ornaments rubric to the second year of Edward VI. is held to authorize other accessories known to have been in use at that time, though not specified in the first Prayer-book—e.g., lighted candles, incense, etc. And on the principle that the Reformed Church was legally identical with that before the Reformation—which the 30th canon of 1603 is cited as maintaining—it is further contended that all ancient laws and usages are still in force, except where directly or implicitly abrogated by subsequent enactment. And as the chief ritual authority before the Reformation was the liturgy of Sarum (the Sarum '*use*' referred to in the preface to the present Prayer-book), it is to that standard, as far as possible, that the more advanced Ritualists desire to conform.

(*b*) The *doctrinal* grounds of defense are expressed in the following statements: (1) The Eucharist (as the Lord's Supper was anciently called) is the special institution of Christ, the single rite of continual observance which He enjoined on His disciples, and the chief act of Christian worship. It is therefore right to exalt and dignify it above all other services, and mark it as standing on different and higher ground than any other institution. (2) The Eucharist, according to the universal belief of the ancient church, is to be regarded as a sacrifice, *commemorative*, as the Jewish sacrifices were

anticipatory, of the death of Christ—not as iterating or repeating it (which idea alone the 31st article is held to condemn), but as a solemn pleading and offering of it before God, as Christ Himself offers it in heaven. Hence the position of the celebrant in front of the altar, and the use of a sacrificial vestment, as the chasuble is held to be. (3) In the Eucharist, there is a real presence of Christ, which, though spiritual, is *objective*, i.e., not dependent on the receiver, but as a result of consecration, and to a certain extent *local*. (The growth of this belief is marked by the change made in a later edition of Keble's *Christian Year* of the words, '*not* in the hands,' in a poem on the Eucharist, to, '*as* in the hands.') Hence distinct acts of adoration, addressed not, as is explained, to the elements, but to the Divine Presence, of which they are the vehicles and signs.

(*c*) On the ground of *expediency* also, it is contended: (1) That experience proves that the only way of attracting and gaining a hold on the vast uneducated masses of great towns and cities is by a worship addressed not merely to the ear, but to the eye. 'Ritualism,' says one of its defenders, 'is the *object lesson* of religion.' Services conducted in grand and beautiful buildings—brilliantly lighted—with splendid vestments, touching music, costly decorations, and every outward token of reverence and solemnity, will impress the young and the poor as nothing else can do. Those churches in London where advanced ritual prevails are said to be thronged with worshippers —mainly of the lower classes, and in great proportion of men—when others are almost empty. (2) A further argument, under this head, is connected with the desire, which has grown up of late years among the High Church party, for the restoration of the visible unity of Christendom, and specially the renewal of communion between the Church of England and both the Eastern and the rest of the Western Church; and with this view, it has become an avowed object to assimilate the Anglican service as much as possible to that of other 'Catholic' churches.

It remains to notice briefly the effect of these innovations. It is a remarkable index of the change of popular feeling within recent years, that such bold and startling changes, altering the whole character of the Anglican service, should, by a large number of people, be not only tolerated, but approved. In 1859, the attempt of the rector of St. George's-in-the-East, London, to introduce Eucharistic vestments, led to riots which convulsed East London. In 1867, in about 12 churches of the metropolis—and in several country towns and villages—a far more advanced ritual, with vestments, altar-lights, and other ceremonies, regularly attracted an eager throng, not of spectators only, but of worshippers. And the spread of the movement may be judged by the statement, which appears authorized by facts, that within a few months after the first Report of the Royal Commissioners on Ritual, the vestments were

introduced in more than 30 churches. On the other hand, among the 'Protestant' members of the church, and those of other denominations, the movement provoked strong opposition. Most of the bishops have, directly or indirectly, expressed their disapprobation; the press, except two or three journals, which were its strenuous advocates, was almost unanimous in denouncing it; the more moderate members of the High Church party discourage it; and active efforts have been made to arrest it by legislative interference. In the Lower House of Convocation, on motion of the Dean of Ely, a committee was appointed to consider the subject, which, after careful examination, reported, 1866, June, that vestments and altar-lights, legal or not, should not be introduced without sanction of the bishop; that the censing of persons and things, elevation after consecration, wafer-bread, and presence of non-communicants (except in special cases) were to be discouraged. In deference to this opinion, the censing of persons and things has been in some churches given up. In the beginning of 1866, an opinion was obtained, at the instance of some of the bishops, from five eminent counsel, against the legality of all ritualistic innovations (the main grounds of which opinion are given in the *objections* above stated). In reply to this, another opinion was obtained, by the council of the English Church Union, from nine leading counsel—some of whom have since been raised to the bench—all of whom advise in favor of the legality of vestments, all but two in favor of altar-lights, and all against incense; on the mixed chalice and wafer-bread, they are nearly equally divided.

In the session of 1867, the Earl of Shaftesbury introduced a bill—founded on the 58th canon of 1603—to limit ecclesiastical vestments to the ordinary surplice and hood, in favor of which more than 600 petitions were presented; while one against it, presented by Lord Redesdale, was signed by more than 9,000 clergy and lay communicants. (An earlier memorial, to the Abp. of Canterbury, against any change in the existing law, was signed by more than 40,000 communicant members of the church.) This bill was withdrawn on the appointment by the govt. of a commission 'to inquire into the Rubrics, Orders, and Directions for regulating the course and conduct of Public Worship, etc., according to the use of the United Church of England and Ireland.' The commissioners included the Abps. of Canterbury and Armagh, and the Bps. of London, St. Davids, Oxford, and Gloucester. They published a report to the effect that 'it is expedient to restrain, in the public services of the church, all variations in respect of vesture from that which has long been the established usage of the said church; and that this may be best secured by providing aggrieved parishioners with an easy and effectual process for complaint and redress.' The evidence appended to the report supplies much information as to the various practices prevailing, and the widely

different views entertained. The general conclusions appear to be that vestments, and probably altar-lights and the mixed chalice, are legal; that an ornate ritual is useful among some classes, and might, with certain safeguards, be allowed; that absolute uniformity is impossible, but that the law might be obeyed much more generally than it is; that the maintenance of the present law, with a wide and liberal interpretation, but limited as a maximum to the ritual of the 2d year of Edward VI., with some recognized ecclesiastical authority to restrain unauthorized variations, would be most for the welfare of the church. The report produced no restraint on the progress of Ritualism, and 1873, May, 60,000 persons of standing and influence presented an address to the two abps. requesting them to adopt means for checking the growth of ritualistic practices. 1874, Apr., a bill for this purpose was introduced in the house of lords by the Abp. of Canterbury, entitled The Public Worship Regulation Act. It was adopted by the govt., but was opposed in the house of commons by Mr. Gladstone in a series of six resolutions; and notwithstanding considerable ecclesiastical agitation, it became law in August. Its main provision is the appointment of a judge for the trial of ritualistic cases. A complaint against the use of vestments, ornaments, and rites and ceremonies, or the omission of such as are ordained in the Book of Common Prayer, in the churches or burial-grounds of the Church of England, may be presented to the bishop of the diocese by an archdeacon or churchwarden, or by three parishioners, members of the church of full age, and a year's residence in the parish. In the event of the parties not submitting to the directions of the bishop, he shall forward the case for trial by the judge, from whose decision an appeal lies to the privy council.—See TRACTARIANISM: VESTMENTS.

RIVAGE, n. *rĭv′āj* [F. *rivage*, a shore or beach—from L. *rīpa*, the bank of a stream]: in *OE.*, a bank; a coast; a shore.

RIVAL, n. *rī′val* [F. *rival*—from L. *rīvālis*, one who uses a brook or small stream in common with another, a neighbor, a rival—from *rīvus*, a brook or small stream: It. *rivale*]: one who is in pursuit of the same object as another; a competitor: ADJ. having the same pretensions or claims: V. to strive to gain the object which another is contending for; to stand in competition with; to emulate; in *OE.*, to be in competition; to be a competitor. RI′VALLING, imp. RI′VALLED, pp. *-vald.* RI′VALRY, n. *-val-rĭ*, a striving to obtain an object another is pursuing; competition. RI′VALSHIP, n. state of a rival; contention for superiority or for the same object.—SYN. of 'rivalry': competition; emulation; ambition; rivalship; strife.

RIVALITY, n. *rī-văl′ĭ-tĭ* [L. *rivalĭtas*, rivalship, as in love: see RIVAL]: in *OE.*, equal rank; competition; rivalry.

RIVE, v. *rīv* [Icel. *rifa*, to tear asunder: Sw. *rifva*, to tear: Dan. *rive*, to rend or tear]: to split; to rend or burst asunder; to be split. RĪ′VING, imp. RIVED, pp. *rīvd*, or RIVEN, pp. *rĭv′n:* ADJ. cloven; split. RIVER, n. *rī′vėr*, one who rives.

RIVE-DE-GIER, *rēv-dėh-zhē-ā′:* flourishing manufacturing town of France, dept. of Loire, on the Gier, in the middle of the best coal-field in France, 13 m. n.e. of St. Etienne by railway. There is water-communication with the Rhone by the Canal-de-Givors. South of the town is the immense and well-built basin of Couson, containing 1,500,000 cubic *mètres* of water for supply of the canal. R. was formerly a mere stronghold, surrounded by high walls, and defended by a strong castle; and 1815, the number of its inhabitants was less than 4,000. Around the town, there are about 50 coal-mines in operation; and the principal manufacturing establishments are silk-mills, important glass-works, factories for steam-engines and other machinery, steel factories and foundries. Pop. 16,100.

RIVEL, v. *rĭv′ĕl* [AS. *ge-riflian;* Dut. *ruyffelen*, to wrinkle]: in *OE.*, to wrinkle; to shrivel; to corrugate. RIV′ELLING, imp. RIVELLED, pp. *rĭv′ld.*

RIVER, n. *rĭv′ėr* [F. *rivière*, a river—from mid. L. *ripārĭă*, a shore, a river—from L. *rīpa*, a bank: Sp. *ribera;* It. *riviera*, a shore, bank, or river]: stream of water flowing in a channel into another river, into the ocean, or into a lake or sea (see below): a copious flow; abundance. RIVER-BASIN, the whole extent of valley or basin-shaped country drained by any river and its tributaries. RIVER-CRAFT, small vessels or boats which do not put to sea. RIVER-BED, the bottom of a river. RIVER-GOD, a deity supposed by the ancients to preside over a river. RIVER-HORSE, the hippopotamus—an animal living in rivers. RIVER-TERRACE, a more or less steep cliff, a few ft. or several yds. high, with a flat terrace on a level with top. Terraces occur in valleys of the n. hemisphere, and show the action of the river in scooping out its bed when it flowed at a higher than its present level. They are attributed to elevation of the continents, giving increased rapidity to the flow of water, together with a decrease of the amount of water, after a depression following the Glacial Period, when river-beds were filled up with the large amount of material deposited during the reign of ice, and especially of fine material from floods on the melting of the ice. The cliff corresponds to the present bank, and the terrace to the alluvial plain through which the river runs. The cliffs and terraces are repeated several times in some river-basins, and they frequently correspond on the two sides of the valley. They follow the course of the river, sloping downward with decline similar to the descent of the stream; in this differing from the parallel roads formed by standing water. See QUATERNARY AGE: TERRACE EPOCH: GLENROY.

RIVER.

RIVER: natural stream of water, usually of considerable size, flowing between banks or walls. Rivers are the result of the natural tendency of water, as of other bodies, to move downward to the lowest position it can reach. The supply of water for formation of rivers, though apparently derived from various sources, as from rain-clouds, springs, lakes, or from melting of snow, is really due only to atmospheric precipitation; for Springs (q.v.) are merely collections of rain-water; lakes are collections of rain or spring water in natural hollows, and snow is merely rain in a state of congelation. The rills issuing from springs and from surface-drainage unite during their downward course with other streams, forming *rivulets*, or brooks; these, after a further course, unite to form *rivers*, which, receiving fresh accessions in their course from *tributaries* or affluents (subordinate rivers or rivulets) and their *feeders* (the tributaries of tributaries), sweep onward through ravines, and over precipices, or pass with almost imperceptible motion across wide plains, till they reach their lowest level in ocean or lake. The path of a R. is called its *course;* the hollow channel along which it flows, its *bed;* and the tract of country from which it and its subordinates draw their supplies of water, its *basin*, or *drainage-area*. The basin of a R. is bounded by an elevated ridge, part of which is generally mountainous, the crest forming the water-shed; and the size of the basin, and the altitude of its water-shed, determine *cæteris paribus*, the volume of the R.: see RAIN. The greater or less degree of uniformity in the volume of a river in the course of a year is one of its chief physical features, and depends much on the mode in which its supply of water is obtained. In temperate regions, where the mountains do not reach the limit of perpetual snow, the rivers depend for their increase wholly on the rains, which, occurring frequently, and at no fixed periods, and discharging only comparatively small quantities of water at a time, preserve a moderate degree of uniformity in the volume of the rivers—a uniformity aided by the fact, that in these zones only about one-third of the rainfall finds its way directly over the surface to the rivers; the remaining two-thirds sinking into the ground, and finding its way to spring-reservoirs, or gradually oozing through at a lower level in little rills which continue to flow till the saturated soil becomes drained of its surplus moisture, a process which continues for weeks, and helps greatly to maintain the volume of the R. till the next rainfall. This process is possible only where the temperature is mild, the climate moist, evaporation small, and the soil sufficiently porous; and under these circumstances, great fluctuations can occur only from long-continued and excessive rains or droughts. In the hotter tracts of the temperate zones, where little rain falls in summer, small rivers and mountain torrents occasionally become completely exhausted.

In tropical and semi-tropical countries, on the other hand, the year is divisible into one dry and one wet season (see RAIN): in consequence, the rivers also have a periodicity of rise and fall, the rise taking place first near the source, and, on account of the great length of course of some of the tropical rivers, and the excessive evaporation to which they are subjected (necessarily greatest where the current is slow), not making itself felt in the lower part of their course till a considerable time afterward. Thus, the rise of the Nile occurs in Abyssinia in April, and is not observed at Cairo till about midsummer. The fluctuations of this river were a subject of perpetual wonder to the ancient civilized world, and were of course attributed to superhuman agency; but modern travel and investigation have not only laid bare the reason of this phenomenon, but discovered other instances of it, before which this one shrinks into insignificance. The maximum rise of the Nile, about 40 ft., floods 2,100 sq. m. of ground; while that of the Orinoco, in Guiana, which is 30 to 36 ft., lays 45,000 sq. m. of savannah under water; the Brahmaputra at flood covers the whole of Upper Assam to a depth of 10 ft., and the mighty Amazon converts a great portion of its 500,000 sq. m. of silvas into one extensive lake. But the fluctuations in the rise of the flood-waters are surpassed by some of the comparatively small rivers of Australia, one of which, the Hawkesbury, has been known to rise 100 ft. above its usual level: this, however, is because the river-beds are hemmed in by lofty abrupt cliffs, which resist the free passage of a swollen stream.

The increase from the melting of snow in summer occurs most frequently during the rainy season, so that it is difficult to determine accurately the share of each in producing the floods; but in some rivers, as the Ganges and Brahmaputra, the increase from this cause is distinctly observable, as it occurs some time after the rains have commenced, while in the case of the Indus it is the principal source of flood. When the increase from melted snow does not occur during the rainy season, we have the phenomenon of flooding twice a year, as in the Tigris, Euphrates, Mississippi, and others; but in most of these cases the grand flood is that due to the melting of the snow or ice about the source. In illustration of the enormous variation in the volume of rivers subject to periodical rise and fall, a few instances are presented in which the minimum and maximum delivery per second have been ascertained:

DELIVERY IN CUBIC FT. PER SECOND.

	Minimum.	Maximum.	Average for a Year.
Nile (at Assouan)...	24,000	362,000	101,000
Ganges.....	36,000	494,000	141,000
Irrawadi,.....	84,000 (?)	1,000,000 (?)	350,000
Brahmaputra.....	146,000	1,800,000 (?)	520,000

The advantages of this periodical flooding in bringing down abundance of rich fertile silt—the Nile bringing down, it is said, no less than 140 millions of tons, and the Irrawadi 110 millions of tons annually—are well known. Islands are thus frequently formed, especially at a river's mouth (see DELTA). Permanent and capacious lakes in a river's course have a modifying effect, owing to their acting as reservoirs, as in the St. Lawrence; while the Red River of the North, the Mississippi, and others in the same tract, inundate the districts surrounding their banks for miles. In tropical countries, owing to the powerful action of the sun, all rivers whose source is in the regions of perpetual snow experience daily augmentation of their volume; while some in Peru and Chili, being fed only by snow-water, are dried up regularly during the night.

The course of a R. is necessarily the line of lowest level from its starting-point, and as most rivers have their sources high up a mountain slope, the velocity of their current is much greater at the beginning. The courses of rivers seem regulated partially by geological conditions of the country—e.g., the San Francisco of Brazil, which forms with perfect accuracy the boundary-line between the granitic and the tertiary and alluvial formations in that country; and many instances are known of rivers changing their course from the action of earthquakes, as well as from the silting up of the old bed. The inclination of a river's course also is connected with the geological character of the country; in primary and transition formations, the streams are bold and rapid, with deep channels, frequent waterfalls and rapids, and pure waters, while secondary and alluvial districts present slow and powerful currents, sloping banks, winding courses, and tinted waters; the incline of a river is, however, in general very gentle—the average inclination of the Amazon through its whole course being estimated at little more than 6 inches per mile, that of the Lower Nile less than 7 inches, and of the Lower Ganges about 4 inches per mile. The average slope of the Mississippi through its whole length is more than 17 inches per mile, while the 'arrowy Rhone' is, among large rivers, the most rapid in the world—its fall from Geneva to Lyon being 80 inches per mile, and 32 inches from Lyon to its mouth.

The velocity of rivers does not depend wholly on their slope; much is owing to their depth and volume (the latter being proved by the fact that the beds of many rivers remain unaltered in size and slope after their streams have received considerable accessions, owing to the greater rapidity with which the water runs off); while bends in the course, jutting peaks of rock or other obstacles, whether at the sides or bottom, and even the friction of the aqueous particles, which, though slight, produces perceptible effect, are retarding agencies. In consequence, the water of a R. flows with different velocities at different parts of its bed; it moves more

slowly at the bottom than at the surface, and at the sides than the middle. The line of quickest velocity is a line along the centre of the current, and in cases where this line is free from sudden bends or sharp turns, it represents also the deepest part of the channel. The average velocity of a R. may be estimated approximately by finding the surface-velocity in the centre of the current by means of a float which keeps just below the surface, and taking four-fifths of this quantity as a mean. If the mean velocity in ft. per minute be multiplied by the area of the transverse section of the stream in sq. ft., the product is the amount of water discharged in cubic ft. per minute. According to Sir Charles Lyell, a velocity of 40 ft. per minute will sweep along coarse sand; one of 60 ft. fine gravel; one of 120 ft. rounded pebbles; one of 180 ft. (a little more than two m. per hour), angular stones the size of an egg. For the rate of its progression, and a general description of the erosive action of rivers, see WATERFALLS. By far the greater number of rivers find their way to the ocean, either directly or by means of semi-lacustrine seas; but others, as the Volga, Sir-Daria (Jaxartes), Amu-Daria (Oxus), and Kur (Araxes), pour their waters into inland seas; while many in the interior of Asia and Africa—as the Murghab in Turkestan, and the Gir in the south of Morocco—'lose themselves in the sands,' partly, doubtless, owing to the porous nature of their bed, but much more to the excessive evaporation in those regions. For the deep cañons of some American rivers, see COLORADO RIO. The following are a few of the chief rivers in each continent, with their courses in English statute m., and their drainage areas in English geographical sq. m.:

	Length.	Drainage area.
EUROPE.		
Thames	220	5,000
Vistula	598	57,000
Loire	598	34,000
Rhine	750	65,000
Elbe	787	42,000
Dwina	1,041	106,000
Don	1,104	168,000
Dnieper	1,243	170,000
Danube	1,722	234,000
Volga	2,762	397,000
ASIA.		
Euphrates	1,716	196,000
Ganges	1,557	391,000*
Indus	1,800	372,000
Maykan or Mekhong	2,417	216,000†
Thaluain or Salwin	2,152	331,000
Irrawadi	2,532	
Hoang-ho	2,624	537,000
Obi	2,670	925,000
Amur	2,739	583,000
Lena	2,762	594,000
Yenesei	3,322	785,000
Yang-tze-kiang	3,314	548,000

* Excluding Brahmaputra, 1,800 miles long, with basin of 361,000 sq. m

† Including basin of Menam.

AFRICA.

Zambesi	1,400	432,000
Congo	2,900	1,300,000
Nile	3,300	520,000

AMERICA.

St. Lawrence	2,072	298,000
Rio Bravo del Norte	2,138	180,000
La Plata	2,210	886,000
Mackenzie	2,440	442,000
Amazon	3,545	1,512,000
Mississippi	3,716	982,000

River : Rights in Law (Riparian Rights).—It is generally settled in all of the states that rivers in which the tide does not ebb and flow, though declared public highways for certain purposes, are nevertheless private property, and the soil to the middle of the river belongs to the riparian or adjoining owner, subject only to the right of the public to use it. But in navigable rivers where the tide does ebb and flow, the soil belongs to the state, up to the ordinary high-water mark: the riparian owner, unless he has a special grant, owning no farther than to high-water mark. In a few states this doctrine has been repudiated, and if the river be navigable for any useful purpose, whether the water be tidal or fresh water, the title to the soil or bed of the river is in the state. The owner in either case, whether the river be tidal or fresh water, may exercise his proprietary interest by erections on the soil of the river, provided that such erections do not interfere with the public use or navigation of the waters covering the soil. Individuals may acquire and hold separate rights, sometimes conflicting and sometimes consistent with the rights of the state. A riparian owner has other rights than those possessed by other citizens of the state: such rights are incident to the ownership of the property on the river-banks: among these riparian rights are—

1. The right to navigate up and down and across the river and from the opposite shore to his own land, with the privilege of embarking himself and others and the produce of his farm and other goods therefrom.

2. The right to establish a ferry to the opposite shore and to control the terminus of a ferry from the opposite shore to his own.

3. The right to fish, also the sole right of fishing with nets or seines in connection with his own land.

4. The right to own, as his individual property, alluvial additions.

5. The right to put the water that washes his bank to whatever uses his pleasure or business may prompt, if he does not interfere with the rights of the public.

In some of the states, if the river be non-tidal and non-navigable, these rights attach; but if the tide ebb and flow and the river be navigable, the riparian owner has none of these peculiar privileges, except that of alluvion and accession.

RIV'ERHEAD: village, county-seat of Suffolk co., N. Y.; on the Peconic river, at the head of navigation, and on the Long Island railroad; 67 m. e. of New York. The village was first settled in 1690, and its growth during the first century was slow; in 1729 it was made the county-seat. During the war of 1812 a skirmish between men from some British vessels and the American militia took place near the village and within the limits of the township. It has a variety of industrial establishments, including grist mills, a woolen mill, planing and molding mills, carriage works, soap factories, and an organ manufactory. It contains the county courthouse, the agricultural fair buildings and grounds, and has a high school with a school library. Pop. 3,650.

RIVERSIDE: city and county-seat of Riverside co., Cal.; on the Santa Fe, Southern Pacific and Salt Lake railroads; about 60 m. e. of Los Angeles. It was founded in 1870 by settlers largely from the New England states and New York, and was incorporated as a city in 1886.

Riverside is famous as the largest citrus producing and shipping point in the world, the annual output of the citrus fruits in Riverside county being over 8,000 cars, of which something over 1,000 cars are lemons, the balance being oranges (nearly 6,000 cars of this fruit are shipped from the city of Riverside alone). There are about 40 packing houses in the city where oranges and lemons are shipped, employing over 1,500 persons at the height of the season. Alfalfa and deciduous fruits are also successfully grown, and there is a large grain-producing area in the county.

Riverside has one of the most extensive and complete irrigation systems in southern California. The climate is remarkably healthful and the place is famous as a health resort. The architecture of the public buildings has been largely developed along Mission lines, and among the famous buildings of this character are the Glenwood hotel, the Carnegie library and the high school building. The courthouse is a single-story building built along classic lines, all on the ground floor, and cost $250,000. Riverside is the seat of Sherman Institute, a United States Indian School, which has over 600 pupils.

There are three banks with a combined capital of $250,000, and deposits of about $3,000,000. The government of the city is vested in a board of trustees of five members, two chosen at one election and three at the next, elections occurring every two years. Pop. (1910) 15,212.

RIVES, Amelia, Princess Trubetzkoy: American novelist; b. Richmond, Va., Aug 23, 1863. She was married to John Armstrong Chanler in 1888, but secured a divorce from him on account of incompatibility, and in 1896 was married to a Russian artist, Prince Pierre Troubetzkoy. Her first marked literary success was her

novel, *The Quick or the Dead?* (1888). Her other works include: *Virginia of Virginia* (1888); *The Witness of the Sun* (1889); *Barbara Dering* (1892); *Tanis, the Sang-Digger* (1893); *The Mocking of the Gods* (1902); *Seléné* (1905); *Augustine the Man* (1906).

RIVES, William Cabell: American legislator and diplomat: b. May 4, 1793; d. Apr. 26, 1868. He was educated at Hampden-Sidney and William and Mary colleges, studied law, and in 1816 was a member of the Virginia constitutional convention. In 1817-19 and in 1822 he served in the state legislature, and in 1823-9 was a member of Congress. He was minister to France in 1829-32 and in that capacity negotiated the treaty of indemnity in 1831. He served in the United States Senate in 1832-4, 1835-45, and in 1849-53 was again minister to France. He was a member of the peace conference at Washington in 1861, and after the secession of the South sat in the provisional congress at Montgomery, Ala. He published *Life and Times of James Madison* (1859-69).

RIVET: n. *rĭv'ĕt* [F. *river,* to rivet or clinch; *rivet,* the welt of a shoe, a rivet or clinch: Port. *rebitar,* to double back the edge or point of a thing, to clinch a nail: Icel. *rifa,* to tack together]: metal pin inserted into a hole pierced through two plates overlapping each other, and hammered broad at both ends in order to fasten the plates firmly together: rivets are frequently thus inserted and hammered down while red-hot, so that the contraction of the rivet in cooling may draw the plates into closer contact: V. to fasten firmly; to clinch; to drive and clinch a rivet; to make firm or immovable. Riv'eting, the forming of the rivet heads in place. The rivets are first heated to a red heat, then they are placed in the rivet holes in the plates, and the tail turned over or clenched by the blows of a hammer. This operation is commonly called closing up. Riveting is accomplished either by the use of hand hammers and hand riveting-sets, which close up and form the tails of the rivets, or by hydraulic pressure. In machine riveting, the closing-up and the forming of the tail are performed in one operation.

RIVIERA, *rē-vē-ā'râ* [It. sea-shore, coast]: term applied to the narrow strip of coast-land bordering the Gulf of Genoa from Nice to Spezzia. Between Nice and Genoa it is called the Riviera di Ponente, or w. coast, and between Genoa and Spezzia, the Riviera di Levante, or e. coast. It abounds in striking scenery, uniting beauty with grandeur. The modern road that traverses it was a work of formidable difficulty; it was begun under French rule, and finished by the Sardinian govt. after the fall of Napoleon. The old road, dangerous and almost impracticable, was known as the Corniche road, and this name is often applied to the modern one. A railroad traverses the whole length of the Riviera.

RIV'INGTON, James: American printer: b. London about 1724; d. July 4, 1802. Early in life he was a bookseller in London, but in 1760 came to America, and opened a shop in Philadelphia, then in 1761 established himself in New York, and on April 22, 1773, began the publication of a newspaper entitled the *New York Gazetteer,* or the *Connecticut, New Jersey, Hudson River, and Quebec Advertiser.* It was Royalist in sympathies and circulated among the Tories and gave to its publisher a position of some prominence. His affairs seem to have been under investigation by both the Provincial and Continental congresses, and he himself placed in temporary confinement. In November, 1775, in consequence of his constant assaults upon the patriots, and especially Captain Sears, that officer came from Connecticut with a company of horsemen, proceeded to Rivington's printing office, destroyed the press, and converted the types into bullets. Rivington then went to England, and being appointed king's printer in New York, returned with a new press after the city had fallen into the hands of the British, and in October, 1777, resumed the publication of his paper under the old title, soon changed to *Rivington's New York Loyal Gazette,* and on December 13 to the *Royal Gazette.* About 1781, when the success of the British was becoming very doubtful, he played the part of a spy, furnishing Washington with important information. When, therefore, New York was evacuated, Rivington remained in the city and changed the title of his paper to *Rivington's New York Gazette and Universal Advertiser.* The paper finally suspended publication in 1783, and he passed the remainder of his life in comparative poverty.

RIVOLI, *rē'vō-lē:* town of n. Italy, on the right bank of the river Dora, 8 m. w. of the city of Turin. Pop. 5,600.—Rivoli must not be confounded with the village of the same name in the province of Verona, the scene 1797 of one of Napoleon's most decisive victories over the Austrians.

RIVOSE, a. *rī'vōs* [L. *rīvus,* a small stream]: applied to surfaces marked with irregular grooves or furrows.

RIVULET, n. *rĭv'ū-lĕt* [L. *rivŭlus,* a small stream—from *rīvus,* a river]: a small river or stream.

RIX-DOLLAR, n. *rĭks-dŏl'lėr* [Dan. *rigsdaler;* Ger. *reichsthaler,* literally, the dollar of the empire]: a silver coin of Denmark, etc., varying in value from about 30 cents to $1.10.

RIXDORF, *rĭksdorf:* village of Germany, founded by Bohemian Moravian Brethren 1737, with the permission, and under the protection, of Frederick William I. It is s.e. of Berlin and connected with it by a street railway, and is virtually a suburb of that city. The inhabitants of Rixdorf are engaged in weaving, manufacture of india-rubber goods, and in such other occupa-

tions as are carried on at Berlin and its vicinity. Pop. (1900) 90,422.

RIZAL, JOSÉ, *hō-sā' rē-thâl':* Filipino patriot and author: b. Calamba, province of La Laguna, Luzon; d. Manila, Dec. 30, 1896. He studied medicine at Manila, and was graduated from the University of Madrid as doctor of medicine and philosophy; studied farther in Paris, Heidelberg, Leipsic, and Berlin; made researches in philology and ethnology; and was elected a member of the Berlin Anthropological Society. Having returned to the Philippines, he was soon compelled to emigrate, owing to the hatred visited upon him by the old Spanish party on account of his story, *Noli Me Tangere,* descriptive of political conditions in the Philippines. He then resided in Japan, North America, and London, where he prepared an edition of Morga's *Sucesos de las Islas Filipinas,* originally printed in Mexico in 1609. On the continent he wrote another political novel, *El Filibusterismo.* Subsequently he practiced medicine at Hong Kong, and went to North Borneo, where he purposed to establish an agricultural colony of Filipinos. On the outbreak of the native insurrection against Spain, he was accused of being its instigator; and on a third trial was condemned and shot. He was undoubtedly the most talented Filipino of recent times.

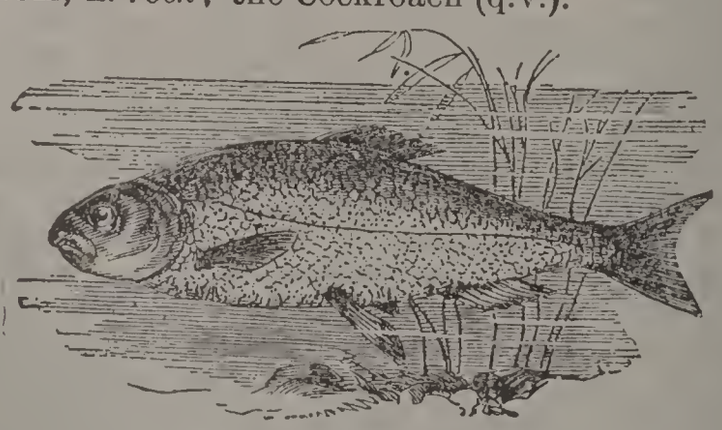
RIZAL, *rē-thâl':* a province of the island of Luzon, Philippines, formed by the consolidation of the former province of Manila (excepting the city of Manila) and the district of Morong, bounded on the e. by the province of Infanta and the Bay Lagoon, and on the w. by the Bay of Manila; area, 1,026 sq.m. There are many plains which, though fertile, are often inundated by the Bay Lagoon to the destruction of crops. In the western part of the province, the betel is grown extensively, especially in the vicinity of the town of Pasay; other products of the province are rice, sugar, corn, and tobacco; there are also extensive forests. The trade of the province naturally concentrates at the city of Manila, with which it is connected by the railroad from Manila to Dagupan and numerous roads. The province was created and civil government instituted in June, 1901. Pop. 246,940.

RIZZIO, *rĭt'sē-ō* (or RICCIO, *rēt'cho*), DAVID: Italian of considerable ability and accomplishments, who, in the reign of Mary Stuart, Queen of Scots, came to Edinburgh in the train of the ambassador from Savoy: died March 9, 1566. His first employment at court was as a musician; but his skill and fidelity led Mary to advance him to the post of her French sec. about the time of her marriage with Darnley; and in this situation he was believed to possess considerable influence over the queen. His advancement was distasteful to the nobles in general, but especially to the party of the Reformers, who suspected him of intriguing with the papal court.

He became obnoxious on other grounds to Darnley and his father, the Earl of Lennox. The former, who had for a time been on the most friendly footing with him, was easily led to believe not merely that he was the real obstacle to his favorite design of having the crown settled on him and his heirs, but also that he had supplanted him in the affections of the queen. In this belief, he entered into a compact with the leaders of the Prot. party—including Murray, Ruthven, Morton—to assassinate R., and slay even in the queen's palace and presence whoever opposed them. Darnley formally bound himself to prevent the attainder of the conspirators, and procure their pardon, and to support and advance the Prot. faith, while the conspirators in return obliged themselves to procure the wished-for settlement of the crown in his favor. Accordingly, 1566, Mar. 9, when Mary, then seven months with child, was sitting at supper in a small cabinet adjoining her bedroom, at Holyrood, attended by the Countess of Argyle, the Commendator of Holyrood, Beaton, Master of the Household, Arthur Erskine, Cap. of the Guard, and R., the king led the conspirators up a secret stair, while the Earl of Morton, with a troop of soldiers, seized the gates of the palace. Led by the king, the conspirators burst into the cabinet, overturned the table, and threw themselves on R., who sprang for protection behind the queen. Ruthven drew his dagger; Ker of Fawdonside, it is said, held a pistol to the queen's breast; while George Douglas, natural son to the Earl of Angus, snatching the king's dagger, stabbed R. over the queen's shoulder, and dragging him from the cabinet, dispatched him in a pool of blood, in the adjoining apartment, with fifty-six wounds. This murder was the first of the series of tragic events in which Mary Queen of Scots was involved. John Knox, in his *History of the Reformation*, characterizes it as 'a just act, and most worthy of all praise.'

ROACH, n. *rōch:* the curve or arch at the foot of a square sail.

ROACH, n. *rōch;* the Cockroach (q.v.).



Roach (*Leuciscus rutilus*).

ROACH, n. *rōch* [AS. *reohche;* Ger. *roche*], (*Leuciscus rutilus*, see LEUCISCUS): a fish of the carp family (*Cyprinidæ*) plentiful in lakes, ponds, and slow-running

rivers of the continent of Europe. It is seldom more than a pound in weight, though it has been known to reach five lbs. The upper parts are dusky-green with blue reflections, passing into silvery-white on the belly, the fins more or less red. The R. is gregarious, and the shoals are often large. It is partially migratory, ascending rivers from lakes to spawn. It is not greatly esteemed for the table. It is caught usually with bait, but sometimes with a small fly. From their resemblance to the Roach, the American dace are called sometimes by the same name, as is also, locally, a small fresh-water sunfish.

ROACH, *rōch*, JOHN: ironmaster and shipbuilder: 1813, Dec. 25—1887, Jan 10: b. Mitchellstown, co. Cork, Ireland. Alone of all his family, he emigrated to America 1829. He first found employment in N. J. as water-boy serving a gang of men that were digging a canal; but disgusted with such conditions of life, he returned to New York, and for a short time was employed in a ten-pin alley. He next went to work in an iron foundry in the 'pines' of N. J., intending to return to Ireland when he should have money to pay his passage. At the end of 2 yrs. he had saved $50, and that he paid to the proprietor of the foundry as an apprenticeship fee. He learned the trade of iron-molder, and later that of machinist. At the age of 21 he had saved $1,500, but lost it all. Later, with a capital of $100 he joined a few other mechanics in purchasing the Ætna Iron Works in New York: subsequently R. became sole owner of the works. The outbreak of the civil war brought to R. opportunities which he was not slow to improve. He constructed for the govt. marine engines and monitors. After the war he became a builder of iron steamships, for river, coasting, and sea-going commerce. He established at Chester, Penn., 1871 a great shipyard with engine works in which were constructed vessels for the navy and the merchant marine. One of the last vessels built by R. for the govt., the dispatch-boat *Dolphin*, the sec. of the navy at first refused to accept on the ground that the vessel was 'structurally weak,' but afterward the *Dolphin* was accepted. The rejection of the vessel was a mortal wound to the pride of the 'father of iron shipbuilding in America.' He made an assignment, closed his works, sickened, lingered a few months, and died. R. was a man of remarkable simplicity and modesty: not in the least degree was he spoilt by prosperity. He owed absolutely nothing to school-education, but nature had gifted him with rare intellectual power, and in a life of unceasing activity he had contrived to master the entire field of his vocation in all its aspects. In his shipyards were constructed in all 114 iron vessels.

ROAD—ROADS AND ROAD-MAKING.

ROAD, n. *rōd* [AS. *rad;* Dut. *reede;* Dan. *ridt,* a riding, a road: AS. *ridan,* to ride: F. *rade,* an anchorage-ground for ships (see RIDE)]: a public way by which passengers, vehicles, and animals may pass from place to place; a highway (see ROADS AND ROADMAKING): in *law* (see HIGHWAY): anchoring-ground for ships: in *OE.,* inroad; incursion; a journey. ROAD-METAL, stones broken small for covering and repairing roads. ROAD-STEAD, n. *rōd'stĕd,* or THE ROADS, place where ships may safely *ride* at anchor, at some distance from the shore. ROAD'STER, n. *-stėr,* a horse fitted for travelling; a ship at anchor. ROAD-SURVEYOR, an officer whose duty it is to see public roads kept in a good state of repair. ROAD VEHICLES (see VEHICLES, ROAD). ROAD'-WAY, n. *-wā,* the part of a road travelled by vehicles. ROADSIDE, n. the side of a road: ADJ. by the side of a road, as a *roadside* inn. ON THE ROAD, travelling. TO TAKE TO THE ROAD, to engage in robbery upon the highways. LAW OF THE ROAD (see RULE OF THE ROAD: NAVIGATION LAWS).—SYN. of 'road': highway; street; lane; way; path; pathway; route; course; passage.

ROADS AND ROAD-MAKING: ways, highways, streets; and the art of their construction. Roads form a primary element in the material advancement of a nation, being essential to the development of the natural resources of the country. Railways have in modern times superseded to some extent the common highways; still these retain their importance, both independently and as essential auxiliaries.

The Romans were great constructers of roads, and regarded them as of vital importance for conquest and the maintenance of their empire. They are said to have learned the art from the Carthaginians. Except where some natural barrier made it impossible, the Roman roads were almost invariably straight; probably because the chief means of transport then in use were beasts of burden, and not wheeled vehicles, which made preservation of the level of less consequence. The substantial character of the Roman roads is shown by the fact that they have in some instances borne the traffic of 2,000 years without material injury. The plan of construction was nearly uniform (for its description see APPIAN WAY). They varied in breadth from 15 to 8 ft., and had often raised footpaths at the sides, and blocks of stone at intervals, to enable travellers to mount on horseback.

The roads made by the Romans in Britain gradually fell into decay, and the attempts now and then made to repair them were insufficient to prevent England falling into a worse state with respect to its highways than most other European countries. In 1285 one of the earliest laws on the subject of roads was passed. It directed that all trees and shrubs be cut down to the distance of 200 ft. on either side of roads between market-towns, to prevent concealment of robbers in them. The first toll for the repair of roads was levied by the authority of Edward III. 1346, on roads which now form

part of the streets of London. In 1555, an act was passed requiring each parish to keep its roads in repair; but long after this, the roads even in the neighborhood of London were wretchedly bad, and in other parts of the country still worse. Mostly, indeed, they were mere horse-tracks; the chief advantage in following them being, that they led along the higher grounds and so avoided bogs. These trackways were usually impassable in winter; being narrow, and in many places so deep and miry as to be more like ditches than roads. So late as 1736, the roads in the neighborhood of London were so bad that in wet weather a carriage could not be driven from Kensington to St. James's Palace in less than two hours, and sometimes stuck in the mud altogether. Much curious information on the state of the roads and means of conveyance in England during the long period from the decay of the Roman roads to the middle of the 18th century is in Smiles's *Lives of Engineers,* vol. I.

In the United States the composite nature of the government has often led to a doubt as to who should have jurisdiction of the roads and who should bear the cost of their improvement. Some have thought that the United States government should assume the burden, and, in the early part of the 19th century, it built a great national road from Cumberland, Md., to Saint Louis, Mo., and other national roads of less importance. Some have thought that the States should assume jurisdiction and bear the burden of cost required for improvement, and this is now being done to a great extent in New England and New York. But the prevailing opinion of the people heretofore has been that the counties or local communities should maintain jurisdiction and bear the burden of cost. So, for generations the people living in the rural districts and owning the agricultural lands have borne the entire burden and have made substantially all the roads of this country. This is a burden, however, that rests too heavily on the rural communities and which they are either unable or unwilling to bear, and, as a result of this fact, all permanent improvement has been retarded. We are now passing through in this country what England passed through 200 years ago, that is to say, we are trying to require a portion of the community—those living in the rural districts—to build and maintain the roads for the use of all the people. This is an unjust proposition that cannot be maintained successfully in this country any more than in England or other European countries.

In a government having a composite nature like that of the United States it is not always easy to determine just what part the general government, the state government, and the local government should respectively take in carrying out highway work, though it is generally admitted that there should be coöperation among them all. Leaders in state politics, governors, and other high officials, are very reluctant to recommend to the people

that they levy taxes or issue bonds sufficient to meet the great expense of making the roads what they should be. For the past 100 years the leaders in the various states have been reluctant to recommend that their states assume the burden of cost which is necessary. As a result of this policy the entire burden finally fell on the local communities, that is, the counties, parishes, townships, and districts; so it is true as a general rule and with slight exception that all the rural highways of America have been produced by the farmers of this country, the general theory and practice being that the people in the cities should pave their streets and the people in the country should build and maintain their roads. But this burden has rested so heavily upon the shoulders of the agriculturists that they have not been able to make the progress which is required in order that our highway system may keep pace with our industrial development. It seems to those who have studied the question that the burden is too heavy for the agriculturists to bear, especially in view of the decline in land and agricultural products within the last 25 years. And the case appears stronger when you consider that during the last 25 years there has been a most remarkable concentration of population and wealth in the great cities. In all of the states e. of the Mississippi and n. of the Ohio a majority of the people are living in cities and much more than half of the wealth is concentrated there. If the policy is pursued of resting the entire burden of improving the highways upon the people of the rural districts, one-half, and in some cases more than three-fourths, of the wealth of the country wholly escapes this burden.

The state aid plan works well in the state where it has been tried. New Jersey, Massachusetts, Connecticut, and New York have tried it, and now Pennsylvania and Delaware have come to the front with state aid laws. The plan of state aid, briefly stated, is this: The state pays a fixed part of the cost of building roads out of the general fund raised by taxation of all the people and all the property in the state. Under those circumstances corporations, railroads, trusts and the various representatives of concentrated wealth in the cities, all contribute to this fund. When the appropriation of the money is made, however, the fund is expended in the rural districts, but it must be supplemented by money raised by local taxation. In the State of New York, which has the best method of all, the state pays one-half, or 50 per cent, the county 35 per cent, and the township 15 per cent.

This leads to a consideration of the wisdom of extending the principle involved in state aid so as to include the United States government. The United States began by building certain roads and paying the total cost. Later this policy was reversed and the government did nothing. Under the early policy the govern-

ment did too much, and under the later policy too little. A policy should be adopted under which the government will supplement the funds raised by state and local taxation. In states which have adopted state aid, the funds raised locally are supplemented by the state funds. So, on the same principle, the funds raised by state and local taxation should be supplemented by a fund contributed by the general government.

A comparison of the cost of transportation over the common roads of the United States with the cost of transportation over the macadamized or highly improved roads of Europe shows that it costs from two to three times as much to transport the products of the country over the unimproved roads of the United States as it costs to transport similar productions and tonnage over the improved roads of Europe. About 8 cents per ton mile is the average cost on European roads; whereas in the United States the cost is about 25 cents per ton per mile. This question has been thoroughly investigated by different state governments and by the United States government with the following results: In 1893 the Highway Commission for the State of Ohio reported that the average cost per ton per mile in that state was 25 cents. In 1896 the United States government, through the Office of Road Inquiries in the Department of Agriculture, after an extensive inquiry covering 1,200 counties in nearly all the various state of the Union, reported an average cost of 25 cents per ton per mile; and the Highway Division in the State of Maryland in 1898 reported the cost per ton per mile to be 26 cents in that state.

Nothing has marked the advancement in road building within the last generation as much as the application of labor-saving machinery, now used in road construction. In the days of Macadam the stone was all broken by hand and the process of consolidation was effected by the daily traffic as it passed over the road while in the process of construction. At the present time we have rock crushers for the purpose of reducing the stone to angular fragments; revolving screens for the purpose of separating the stone into different sizes, and from the dust, which is used as a filler and binder over the larger fragments. The power that crushes the rocks also elevates the resulting product into high bins, from which the road surfacing material is loaded into automatic dumping carts by gravity alone, and then these automatic dumping carts or wagons when driven to the road that is under construction are emptied of their contents by gravity and the material spread upon the roadbed at a uniform width and thickness by the forward motion of the automatic dumping carts or wagons as they discharge their loads. These angular fragments are crushed by machinery and separated by the automatic process without the hand of labor being applied in the

ordinary manner, and are finally consolidated into a hard, smooth and impervious crust by the passing of a steam roller over the surface many times in succession after the mass has been sufficiently moistened by the application of water, which is generally done by means of an ordinary street sprinkler. So that the finished road may now be produced in a more scientific manner than ever before, but at the same time with greater economy and much less cost, because the application of machinery has been substituted for the primitive hand of common labor.

In addition to the improvements introduced in the crushing, handling and consolidating of the mass of stone used in the macadam roads, there are many other useful inventions in the way of earth handling machinery by which the cost of grading and shaping the road-bed is much reduced. In addition to the macadam road there are various other kinds in use in the United States, among them being the chert roads common in the south, the brick roads common in the north, and the gravel roads common in both the north and south.

ROAM, v. *rōm* [OF. *romier;* It. *romeo,* a pilgrim, one who makes a pilgrimage to Rome—from *Roma,* Rome: the derivation more likely in the following direction—AS. *ryman,* to make room: Icel. *ryma;* Ger. *raümen;* Dut. *ruimen,* to make or leave room]: to range; to ramble; to wander over; to move about from place to place without any certain purpose: N. a ramble. ROAM'ING, imp.: N. the act of wandering; a ramble. ROAMED, pp. ROAM'ER, n. *-ėr,* one who roams.—SYN. of 'roam, v.': to ramble; stroll; wander; stray; range; rove.

ROAN, a. *rōn* [OF. *rouën;* F. *rouan;* Sp. *ruano;* It. *roano,* roan: origin unknown]: applied to a horse of a bay or dark color, with spots of gray or white thickly interspersed; of a color having a decided shade of red: N. grained sheepskin leather.

ROANNE, *rō-ânn':* thriving town of France, dept. of Loire; after St. Etienne, most important town in the dept. for industry and commerce; on the left bank of the Loire, here navigable, 52 m. by railway n.w. of Lyon. Its streets are wide, and its houses handsome. The chief structures are the bridge over the Loire, the public library, and the college buildings. There are important manufactures of muslins, calicoes, and woolen and other fabrics, and ship-building at several dockyards. Roanne is also a most important entrepôt for commerce between n. and s. France. Around and within the town are numerous traces of the ancient Roman rule and civilization. Pop. 34,901.

ROANOKE: city in Roanoke co., Va.; located on the Roanoke river and on the Norfolk & Western railroad, 53 m. w. of Lynchburg. Roanoke was formerly a leading tobacco market, but in later years has become the centre of a large section rich in iron mining and farm-

ing interests. The city has extensive iron manufacturing interests, rolling mills, tobacco factories, bottling works, box factories, locomotive and car shops, canning factories, wheel and spoke factories, machine shops, saw mills, planing mills, woodenware factories, knitting and silk works, iron furnaces, bridge works, foundries, rolling mill, cotton mill, carriage and wagon factories, and many smaller industries. It has an assessed property valuation in 1903 of $13,158,881.58. Municipal tax rate, $1.25 on the $100.

The Virginia College for young ladies and the National Business College for both sexes are located here, and the famous Hollins Institute for young ladies is located within 7 m. of Roanoke. There is also a very fine high school, and grammar and other schools, court-house, city-hall, Academy of Music, and numerous fine business blocks.

The city is governed by a mayor and city council elected by the people. There is an excellent paid fire department and electric street railways and electric lights. The city has an improved sewer system and two waterworks plants. There are several national and state banks, excellent hotels, daily and weekly newspapers and monthly periodicals.

Roanoke was incorporated in 1884, and has grown steadily in population and wealth. In 1890 it had 16,159 inhabitants, and in 1900 this had increased to 21,495. The population in 1910 is 34,874.

ROANOKE: a river in Virginia and North Carolina, formed by the confluence of the Dan and Staunton rivers at Clarksville, Va. It flows s. and s.e. for nearly 300 m., entering the Atlantic ocean through Albemarle sound. It is a tidal stream fully 80 m. from its mouth and is navigable to its source. The Dan and Staunton are navigable for small vessels for some distance from the Roanoke. At Halifax, N. C., there are rapids and falls which furnish considerable waterpower. A canal has been built around this obstruction to navigation.

ROANOKE COLLEGE: located at Salem, Va. It was established in 1853 under the auspices of the Evangelical Lutheran church, and is governed by a self-perpetuating board of trustees. It offers a classical course, leading to the degree of A.B., and a business course, and has also a preparatory department. It is coeducational, but few women have enrolled. The college possesses a numismatic collection of considerable value, a library with 22,000 volumes; and grounds and buildings valued at over $100,000. The productive funds amount to $65,000, and the annual income is about $15,000. The students number 152, and the faculty 11.

ROANOKE COLONY, THE: in American colonial history, the name applied to a famous land grant of the crown. In 1584 Sir Walter Raleigh, having obtained a large grant of land from Queen Elizabeth, sent out April

9 seven vessels and 108 settlers under the command of Sir Richard Grenville. After skirting the West Indies and Hispaniola, they landed at Roanoke, in North Carolina, June 20. Ralph Lane was left in charge of the settlement and Grenville returned to England. During the following winter Lane made numerous exploring expeditions and suffered greatly from Indian attacks. In the spring he received some aid in men and supplies from Sir Francis Drake, but finally the settlers persuaded Drake to take them home. Soon after Grenville arrived with new settlers. These had been destroyed by the Indians when, in 1587, a new colony of Raleigh's, under White, came out. White himself returned to England. When he came back (1590) he found the colony vanished. It seems to have been destroyed by the savages, though there is a theory that descendants of the colonists are still to be found among North Carolina half-breeds.

ROANOKE ISLAND, Battle of: after the capture by Union troops of Forts Hatteras and Clark, at Hatteras Inlet, 1861, Aug. 29, the Confederates began to erect works on Roanoke Island, to command the narrow channel connecting Albemarle and Pamlico sounds. The Union authorities decided to seize the position, and 1862, Jan. 7, Gen. Burnside was ordered to seize and hold Roanoke Island. On Feb. 5 the start was made, with 65 vessels in all, naval vessels and transports. On the 7th the armed vessels engaged the Confederate batteries on the west side of Roanoke Island, and also small gunboats, which were soon driven off. The forts were silenced and on the morning of the 8th Burnside had over 8,000 troops and a battery ashore at Ashby's Harbor. Confronted by Confederate works, manned by nearly 6,000 men, he had formed his division into three brigades, and, after a more than three hours' fight, the entire position was carried. Burnside marched to the head of the island, where the forts on the shore and their entire garrisons were captured. The Union loss was 37 killed, 214 wounded, and 13 missing. The Confederate loss was 23 killed, 58 wounded, 62 missing and about 2,650 captured, including 159 officers. The Confederate gunboats were pursued next morning by Commander Rowan, with 14 vessels, and after a short but severe engagement, Lynch, the Confederate commander, ordered the abandonment of his boats, ran them aground and set them on fire.

ROAN-TREE, or Rowan-tree, n. *rō'an-trē* or *row'ăn-* [Icel, *reynir,* the rowan-tree or mountain-ash: Sw. *rönn:* Dan. *rön* or *rönnetræ*]: a tree bearing small red berries in large clusters; the mountain-ash, the branches and other parts of which are famous among the superstitious as spells against witches and warlocks; the European *Pyrus aucupăria,* ord. *Rosăcĕæ.* The American species are *P. Americana,* and the elder-leaved *P. sambucifolia,* with blunt or short-pointed leaves.

ROAR, n. *rōr* [AS. *rarian*, to roar, to cry out: Dut. *reeren*, to roar: an imitative word]: the deep full cry of a large animal; any deep loud noise of some continuance; loudly expressed mirth; the howling of a tempest; the sound of stormy waves of the sea: V. to utter a deep loud cry, as a large animal; to give forth a loud and deep continuous noise; to cry aloud; to bawl. ROAR'ING, imp.: ADJ. uttering a deep loud sound: N. a loud deep cry, as of a lion; a loud deep cry of distress, ROAR'ER, n. *-ėr*, one who roars; a broken-winded horse (see ROARING, below). ROAR'INGLY, ad. *-lĭ*. ROARED, pp. *rōrd*. TO DRIVE A ROARING TRADE, *familiarly*, to do a very large business.

ROAR'ING: disease of the air-passages of the horse, characterized by a grating, roaring noise, most noticeable during inspiration, and when the animal is galloped in heavy ground. It usually depends on wasting of some of the muscles of the larynx; is apt to result from frequent attacks of cold, from strangles, inflammation of the neck-vein, or from tight reining. It constitutes unsoundness, unfits the animal for satisfactory performance of fast work, is apt gradually to become worse, when a sharper whistling noise is produced, and is seldom curable. In recent cases, a dose of physic should be given, a smart blister applied to the throat, or a seton inserted. As in broken-winded subjects, the breathing is much less distressed when the horse is fed and watered several hours before being required to exert himself. He should have a liberal supply of good oats, but only a limited allowance of hay, which should be given damped. In bad cases, tracheotomy may be performed, and a pipe inserted in the windpipe, with which heavy draught-horses have been known to work regularly for years.

ROAST, v. *rōst* [OF. *rostir;* F. *rôtir*, to roast: Ger. *rösten*, to roast; *rost*, a grate: Gael. *rost*, to roast]: to dress meat for the table by exposing it to the direct action of heat, as on a spit, in an oven, etc.; to heat to excess; to dry and parch by heat; to tease or banter; to burn broken ore in a heap to free it from some foreign matters; to oxidize by heating in contact with air: N. that which is prepared by heat, as meat: ADJ. prepared by heat. ROAST'ING, imp.: N. act of one who roasts: the process by which anything is roasted (see below): a bantering. ROAST'ED, pp. ROAST'ER, n. *-ėr*, he who or that which roasts. TO ROAST ONE, to banter and poke fun at one beyond endurance. TO RULE THE ROAST, to govern; to manage; probably only a corruption of 'to rule the *roost*,' in allusion to the cock among his hens.

ROAST'ING. All the apparently numerous forms of cookery may be reduced to two, viz., Roasting and Boiling (q.v.). In this general sense, roasting may be held to include broiling, baking, and all other processes which consist essentially in exposure of food to the action of heat without the presence of any fluid excepting its own natural juices. Chemistry and experience alike teach that the first application of heat in roasting should be powerful and rapid, so as to form an external wall, by hardening the skin, and coagulating the superficial albuminous juices, and thus retain the deep-seated juices as much as possible within the meat. This external crust is usually formed in about 15 minutes, after which the meat should be removed to a greater distance from the fire, subjected to less heat, and allowed to cook slowly. The evaporation of the internal juices may be further restrained by the free and early application of flour—a process known as dredging. The loss of weight in roasting is greater than in boiling; but it is due mainly to the melting out of fat and the evaporation of water, while the nutritive matter remains in easily digestible form in the interior. Rules for calculating the time requisite for roasting a joint of given weight are in all the ordinary cookery-books. Unless the roasting is continued long enough, those parts nearest the centre do not become hot enough to allow the albuminous matters to coagulate, hence they appear red, juicy, and *underdone*, as it is commonly called. The exact nature of the chemical changes which occasion the peculiarly agreeable odor of roasted meat is unknown.

ROB, v. *rŏb* [OF. *rober;* Sp. *robar;* It. *rubare;* Dut. *rooven;* Dan. *röve*, to take by violence, to plunder: OHG. *raup*, spoil: mid. L. *raubārĕ*, to rob (see ROBE)]: to deprive of by force, or by secret theft; to steal; to plunder; to take from; in *OE.*, to deprive of something displeasing; to set free. ROB'BING, imp. ROBBED, pp. *rŏbd.* ROB'BER, n. *-bėr*, one who takes the goods of another by force, by open violence, or by secret theft. ROB'BERY, n. *-ĭ*, the forcible taking away of the goods or money of another; a plundering; theft (see below).—SYN. of 'robber': thief; depredator; brigand; pirate; freebooter; despoiler; plunderer; pillager; rifler; —of 'robbery': spoliation; freebooting; piracy; pillage; plunder; despoliation; theft; depredation.

ROB, n. *rŏb* [It. *robbo;* F. and Sp. *rob;* Ar. *robb*, rob]: conserve of fruit; extract or juice of ripe fruit prepared with honey or sugar and boiled to the consistence of a syrup so that it will keep. The name is supposed to be from the similarity of this syrup to the saccharine pulp of locust-pods, called *Al-garoba* by the Moors. The juices of strawberries, raspberries, gooseberries, currants, etc., are boiled with sugar until they form *robs*, used for flavoring drinks, etc.

ROB'BER COUN'CIL: see EPHESUS, COUNCILS OF.

ROBBER PALM, or Cocoanut Crab: a large and powerful land-crab (*Birgus latro*) of the East Indies, related to the hermit-crabs, which lives in a hole in the earth under trees, lining its burrow with the fibrous cocoanut husks, has an almost lung-like modification of the gill-cavity for breathing air directly, yet visits the sea annually in droves to spawn. It goes abroad only at night and feeds on cocoanuts, though it does not climb for them, and is itself eaten in Amboyna and elsewhere. Darwin has graphically described how it tears the husk from the cocoanuts, and hammers on the round depressions at one end until entrance is affected. Consult Forbes, *A Naturalist's Wanderings* (1885).

ROBBERY: is the wrongful taking, without a claim of right, of a thing of value from one's person against his will, by force, or through placing him in fear. In the United States the offense is regulated by the statutes of the various jurisdictions, in some of which the degree of guilt depends on the nature of the act. Actual force need not be employed to induce fear, and fear may extend to a threatened destruction of one's property, or injury to reputation. The law does not hold that the property must be in the actual physical possession of one, or in contact with his person, but merely that it must be in his presence, or in his immediate control; the property need not belong to the person from whom it is taken. Two or more persons may be equally liable for robbery if participating in any of the acts by which it is carried out. Punishment for robbery is fixed by statute.

ROBBIA, *rŏb'bē-â*, Luca della: Italian sculptor: b. Florence 1400; d. 1482. In the Early Renaissance he appeared as the foremost artist of all his contemporaries, and created a new school of sculpture by his marble friezes for the organ-loft of the Duomo at Florence. These are still to be seen in the Bargello Palace of the same city. The work was completed in 1445 and represents in ten panels angels and boys, singing and playing on various instruments, to the rhythmic movement of the dance. For refined and chastened fancy, skilful grouping and animated expression this masterpiece showed a vast advance on the hieratic sculptures of mediævalism. The enthusiasm with which it was greeted was redoubled, when in conjunction with Michelozzo and Maso di Bartolommeo, he executed the bronze doors for the Old Sacristy of the Duomo (1446-64). His name is, however, especially associated with works in clay reduced to pottery in the kiln, and colored and glazed like faience. This faience sculpture was unknown before his time and in it he improved the common process of glazing by a new method all his own. Numberless were the reliefs, medallions, tympanum groups, altars, and other decorations which he and his pupils produced in this style. He began by plain white reliefs on a flat blue

ground; the flawless beauty of his profiles in many sculptures of this kind have been the inspiration of succeeding artists. But he gradually enriched the coloring by the addition of other tints, some critics think, with a loss to classic purity and simplicity; yet the harmonious composition of his designs, the charm of expression which appears in everything he did, added to the boldness with which he ventured into a new field of plastic art have won for him a sort of unique glory among the artists of the Renaissance. His works and those of his pupils are met with in every part of Tuscany, and some examples may also be seen in the museums of Europe. Among his most eminent pupils were his nephew, Andrea della Robbia (1437-1528); and the sons of this latter, Giovanni (1469-1529); and Girolamo (1488-1566).

ROBBINS, n. plu. *rŏb'bĭnz* [a corruption of *rope-bands:* Ger. *raabanden,* rope-bands: Icel. *ra,* a sail-yard; *band,* a tie]: small ropes on board a ship that fasten sails to their yards.

ROBE, n. *rōb* [F. *robe,* a gown or mantle: It. *roba,* a long upper garment—from mid. L. *rauba,* the spoil of robbery, clothes; *raubārĕ,* to rob, to plunder: Sp. *ropa,* clothes]: a long loose garment worn over the dress; a dress of dignity or state; an elegant dress: V. to put on a robe; to dress with magnificence or splendor; to array; to dress. RO'BING, imp. ROBED, pp. *rōbd.* ROBE-MAKER, one who makes the official robes or gowns of clergymen, barristers, aldermen, etc. MASTER OF THE ROBES, an officer of the royal household who orders the sovereign's robes. MISTRESS OF THE ROBES, the lady highest in rank attending on the queen, and who has the care of her robes. ROBING-ROOM, the apartment or apartments where noblemen and lawyers put on their official robes. *Note.*—ROBE is literally the skin with its rough hair which has been robbed or plundered from an animal for man's use, the primary sense being still retained in 'buffalo *robes*' of northwest Amer.: see ROB 1.

ROBERT COLLEGE: Constantinople, Turkey, so-called after Christopher R. Robert, of New York, its chief benefactor, was organized by James H. and William B. Dwight, sons of the Rev. Harrison G. O. Dwight, an American missionary to Turkey. It was opened in 1863, its financial support being guaranteed by the philanthropy of Mr. Robert, who died in 1878, and whose total contributions to the institution amounted to $450,000. In 1864 the college was affiliated to the University of New York. Its first president was the Rev. Cyrus Hamlin, D.D., who, at his resignation in 1877, was succeeded by the Rev. George Washburn, D.D. The curriculum is similar to that of the average American college; while English is the principal language in use, instruction is also given in 13 other languages. The first home of the college was in a private house; the two college buildings now used were built in 1871 and 1891.

ROB'ERT I., King of Scotland. See BRUCE, ROBERT (King).

ROB'ERT II., King of Scotland: 1316, Mar. 2—1390, Apr. 19 (reigned 1371-90); son of Walter Stewart, and of Marjory, only daughter of Robert the Bruce. Robert II. succeeded his uncle, David II., and became founder of the Stewart dynasty. Partly from disposition, and partly from the infirmities of age, Robert II. was a peaceable and apparently weak ruler; though the period of his reign was one of frightful misery inflicted on both sides of the borders by the raids of the powerful and intractable Scotch barons, and the reprisals of the English wardens. In this reign there were invasions of Scotland by an English military and naval force under the command of the Duke of Lancaster (John of Gaunt) 1384, and again by King Richard II. himself 1385, which wasted the land as far as Edinburgh and Fife; and the great retaliatory expedition of the Scotch 1388, when two armies invaded and devastated England, by way of Carlisle and of Northumberland.

ROB'ERT III., King of Scotland: about 1340-1405 (reigned 1390-1405); son of Robert II. His baptismal name was John, but was changed on his accession. His imbecility as a ruler virtually placed the reins of govt. in the hands of his ambitious brother, Robert Earl of Menteith and Fife, whom, 1398, he created Duke of Albany—during whose régime the Scottish barons began to exercise that anarchic and disloyal authority, which, in the reigns of the first three Jameses, threatened to destroy the power of the sovereign altogether. Of Robert's two sons, the eldest was shockingly licentious; and the tragedy of his death in Falkland Castle appears in its traditionary version in Sir Walter Scott's *Fair Maid of Perth.*

ROBERT, *rŏb'ĕrt,* CHRISTOPHER RHINELANDER: educational benefactor: 1802, Mar. 23—1878, Oct. 28; b. Brookhaven, N. Y., son of a physician. In 1830, he was chief of the firm of Robert and Williams, New York, and pres. of a coal company; in 1862, he retired from business. He founded the German Presb. Church, Rivington St.; gave largely to it, and to many objects, including Hamilton Coll. and Auburn Theol. Seminary; and established the coll. on Lookout Mt., Tenn., for instruction of the colored race. His chief gifts were for the founding of ROBERT COLLEGE in Constantinople (q.v.).

ROB'ERT OF GLOUCESTER, *glŏs'ter:* old English (metrical) chronicler, of whom absolutely nothing is known, except that he was alive about the time of the great battle of Evesham (1265). Robert's work is a 'history' of English affairs from the arrival of the fabulous Brutus to the end of Henry III.'s reign; and is valuable partly for its matter (though that is in the main taken from Geoffrey of Monmouth and William of Malmesbury), but more for the language, there seen in its tran-

sition from Anglo-Saxon to the English of Chaucer and Wycliffe. It is written in verse, contains more than 10,000 lines, and—if we judge from the numerous copies made of it—was very popular in the middle ages. The principal extant manuscripts are the Bodleian, the Cottonian, and the Harleian. The Chrinicle was printed by Hearne, 2 vols. 1724; reprint 1810.

ROBERT OF MOLESME, *mō-lām*, SAINT: founder of the Cistercians: b. Champagne 1018; d. Molesme, 1110. At 15 he became a Benedictine monk in the abbey of Montier-la-Celle, where on account of his high and religious character he was elected prior while still the youngest member of the community. He was afterward appointed abbot of Saint Michael de Tonnerre. He was induced to leave this abbey through the recalcitrancy of the monks. In Colan, however, a desert place near the abbey, there lived certain anchorites, and at their request he became their superior; they thence removed to the forest of Molesme, where they built themselves cells and an oratory dedicated to the Holy Trinity (1075). Here the community became relaxed in discipline through the bounteous contributions provided by the bishop of Troyes and others. Robert therefore left them and eventually settled with some devout members of the abandoned community at a place called Cistertium, or Citeaux, five leagues from Dijon in the diocese of Chalons. They chose a spot in the uninhabited forest with the consent of Walter, bishop of Chalons, and Renand, viscount of Beaune, lords of the territory. The day of their establishment was Saint Bennet's Day, March 21, 1098, from which must be dated the foundation of the Cistercian Order. The rule established by Saint Robert allotted four hours for sleep, four for singing the offices, four for manual labor and four for study.

ROBERTS, *rŏb'ėrtz*, BENJAMIN STONE: soldier: 1811—1875, Jan. 29; b. Manchester, Vt. He graduated at West Point, 1835, and was assigned to the 1st dragoons; served on the frontier till 1839, when he resigned; and was a civil engineer 1839-42. He studied law, was admitted to the bar 1843, and practiced till 1846. He served in the Mexican war, and was brevetted lieut.col. He was on frontier duty 1848-61; was brevetted brig.gen. vols. July 16, 1861, and at the close of the war was brevetted brig.gen. U. S. A. He was inventor of the Roberts breech-loading rifle. He died at Washington.

ROB'ERTS, DAVID, R.A.: eminent painter: 1796, Oct. 24—1864, Nov. 25; b. Edinburgh. He began there as apprentice to a housepainter. His talent for art becoming obvious, he was set to study at the Trustees' Acad., and 1822 he went to London, where he found employment as a scene-painter at Drury Lane Theatre. In 1826, a picture of *Rouen Cathedral*, exhibited by Roberts at the Royal Acad., drew attention. In 1827 appeared his painting *St. Germains at Amiens*. For seven years

he was engaged in sketching in Spain, Africa, and the East; and the result was the splendid work (4 vols. 1839), *Sketches in the Holy Land, Syria, Idumæa, Arabia, Egypt, and Nubia.* It is the finest and most elaborate thing of the kind perhaps ever produced, and of itself it would have sufficed for a great reputation to the artist. In 1839 he was elected an associate of the Acad., and 1841 academician. In 1854 he was selected by the queen to paint the *Inauguration of the Great Exhibition in 1851.*

ROB'ERTS, Ellis Henry, ll.d.: printer, editor, and politician: b. Utica, N. Y.: Sep. 30, 1827. He graduated at Yale 1850; and 1851 became editor and proprietor of the *Utica Herald.* He was a member of the N. Y. assembly 1867; delegate to the republican national conventions of 1864, '68, and '76; member of congress 1871-75, and asst. treasurer of the United States at New York 1889-93; treasurer of the United States 1897. He is author of *Government Revenue* (1884) and *The Planting and Growth of the Empire State,* in the American Commonwealth series (1887).

ROBERTS, Sir Frederick Sleigh: 1st Earl Roberts, of Kandahar, Pretoria and Waterford; b. Cawnpore, India, Sep. 30, 1832, son of General Sir Abraham Roberts. He was taken to England at two and was educated at Clifton, Eton, the Royal Military College at Sandhurst, and at the East India Company's cadet college at Addiscombe. In December 1851 he was appointed 2d lieutenant in the Bengal artillery and in the following April sailed to join his company at Dum-Dum. A few months subsequently he became aide-de-camp to his father, then in command of the Peshawur division, and in November 1854 was posted to a troop of horse artillery on the northwestern frontier. His ability secured for him a staff appointment as deputy assistant quartermaster-general and when the Punjab movable column was formed to quell the mutiny, young Roberts was chosen by Neville Chamberlain as his staff-officer, a position he likewise held under Chamberlain's successor, Nicholson. His first experience of actual warfare was at the siege of Delhi, where he was wounded, and in June 1857 he was promoted lieutenant. In September he left Delhi in command of a force bound for Cawnpore, and in the subsequent operations for the relief of Lucknow took an active share. At Khundaganj he rescued at the risk of his life a comrade hard pressed by the enemy, and then captured a standard guarded by two sepoys, for which services he was awarded the Victoria Cross. He participated in the reëstablishment of English authority at Fategharh and at Lucknow, and in 1858-60 was on leave of absence to England. He returned to India in the latter year with the rank as captain and brevet major, and served again under Sir Neville Chamberlain in the Umbeyla campaign in 1863. In

the Abyssinian campaign in 1868 he served as assistant quartermaster-general, held a command in the Lushai expedition of 1871-2 and in 1872-5 was deputy quartermaster-general. He was promoted major-general in 1878 and on the outbreak of the Afghan war was assigned to command the Kuram field force. On November 21 he advanced into Afghanistan though without communication with India and wholly dependent upon a hostile country for supplies. Nine days later he forced the Afghan position at Peiwar Kotul, but further operations were suspended by the treaty of Gandamak. The murder of the British ambassador, Sir Louis Cavagnari, at Kabul, resulted in renewal of the war in 1879, and in October General Roberts again moved against the Afghans. He utterly defeated the forces of Yákúb Khan, at Kabul, forced his abdication, sent him a prisoner to India, and then occupied with the British forces the fortified cantonment of Sherpur. In 1880 intelligence of the siege of the British garrison at Kandahar by Ayub Khan reached General Roberts and on August 9 he set out to the relief of the garrison with an army of 10,000 picked men. For three weeks the army was lost from the view of the world, but on August 31 August Roberts reached Kandahar, gave battle to Ayub Khan, routed his army, and captured his artillery and camp. After the withdrawal of troops was effected he visited England, where he was enthusiastically welcomed and showered with honors. He was created a baronet, presented with the freedom of cities, received the thanks of Parliament and a special medal was struck in honor of his march to Kandahar. In 1881 he was ordered to South Africa as governor of Natal and commander-in-chief against the Transvaal Boers, but peace was concluded before his arrival. He returned to India in November 1881, with rank as lieutenant-general in command of the Madras army, and in 1885 became commander-in-chief of India. In 1890 he received full rank as general and in 1892 was created a baron. He resigned his command in 1893 and returned to England, where he was appointed commander-in-chief of the forces in Ireland in 1895, sworn as a member of the privy council of Ireland, and later in the same year field-marshal. After the disasters which had continuously beset the British arms in South Africa in 1899 at Stormberg, Magersfontein and Colenso, where Roberts' only son fell, the public turned their attention once more to the field-marshal and clamored for his appointment as commander. He arrived at Cape Town early in 1900 with Lord Kitchener as his chief of staff and at once proceeded to the relief of Kimberley. He captured General Cronje with a large share of his force at Paardeburg, then continued a steady fight until Ladysmith was relieved, and a forced march to Bloemfontein followed by the occupation of that post with British troops. Three months later came the second critical point in Gen-

eral Roberts' manipulation of the war. He made a rapid advance upon Johannesburg and Pretoria by way of Kroonstad and Vereeniging and though handicapped by short rations, opposed at almost every step of the way by the enemy, and with railway communication cut off, Roberts moved steadily upon the Boer capital, seized it, relieved Mafeking, annexed the two republics by proclamation, and in the latter part of 1900 declared the war ended. He then resigned his command and returned home. Parliament voted him its thanks and a gift of £100,000, he was advanced to the peerage as Earl Roberts of Kandahar, Pretoria, and Waterford, and Viscount Saint Pierre, and made commander-in-chief of the United Kingdom. In 1901 he became a member of the privy council. His only son having been killed at Colenso, the peerage will by special grant descend to his daughter. Lord Roberts is to the British army the ideal of a soldier, and by the rank and file is affectionately termed 'Bobs.' Added to his military skill is an inexhaustible capacity for detail, a quick grasp of possible alternatives, a tireless energy, and the power to command men and to infuse them with his own indomitable courage and determination. He has written: *The Rise of Napoleon* (1895); and *Forty-one Years in India* (1897).

ROB'ERTSON, Frederick William, M.A.: brilliant preacher in the Church of England: 1816, Feb. 3—1853, Aug. 15; b. London; son of a capt. in the Royal Artillery. At the age of nine, he was sent to the grammar-school of Beverley, in Yorkshire, afterward accompanying his parents to the continent, where he became proficient in French. In 1832 he entered the rector's class at Edinburgh Academy; and 1833 proceeded to the Edinburgh University. His intended profession originally was the bar, but the study of law did not interest him, and he would gladly have become a soldier, for he always felt (as he afterward confessed) 'an unutterable admiration of heroic daring.' His name was placed on the list of the 3d Dragoons, then in India, and he gave two years' study to preparing himself for a military life; but certain difficulties delayed his commission, and Robertson, in obedience to the wish of his father, matriculated at Brasenose College, Oxford, 1836, to study for the ministry, two weeks before his commission reached him. His life had all along been marked by singular purity and depth of religious feeling; hence his new career occasioned him no regret, but brought rather a high resolve to be worthy of his calling. At Oxford, he committed to memory the entire New Testament both in English and in Greek. His views then were moderately Calvinistic: the Tractarian movement did not attract him. His first appointment was to the curacy of St. Maurice and St. Mary Calendar, but his health failed in the course of a year, partly because of the injurious degree to which he

had carried devotional asceticism; and he was compelled to visit the continent. In Switzerland he met and married a daughter of Sir George William Denys, Bart. On his return to England, he was for a time curate to the incumbent of Christ Church, Cheltenham; and there, having become aware of disappointment in the practical results of the strict theological system then known by the partizan name 'evangelicism' (a different usage from the present of that term), he passed through a mental crisis terrific to his sensitive soul, whose result was an 'entire change in the basis of his theological science.' Of this period he wrote—'The one great certainty to which in the midst of the darkest doubt I never ceased to cling [was] the entire symmetry and loveliness and the unequalled nobleness of the humanity of the Son of Man.' From this fixed point he gradually built his creed again, and came to rest in a simple, strong, and charitable Christian faith. In the beginning of 1847, he removed to St. Ebbes, Oxford, and was beginning to attract the notice of the undergraduates at Oxford, when, after two months he accepted the charge of Trinity Chapel, Brighton. For six years he continued to preach sermons, the like of which, for blending of delicacy and strength of thought, poetic beauty and homely lucidity of speech, had perhaps never been heard before in England. His sermons (of which four series have been published) have attained immense popularity and a very large circulation. The first series was published 1855 (repeated editions since). Robertson's *Expository Lectures on St. Paul's Epistle to the Corinthians* appeared 1859. His *Lectures and Addresses on Literary and Social Topics* contain passages of faultless beauty and refinement. A good biography, with letters, was published 1865 by the Rev. Stopford A. Brooke (repeated editions).

ROBERTSON, James: American pioneer: b. Brunswick co., Va., 1742, June 28; d. Chickasaw region, Tenn., 1814, Sept. 1. In 1769 he accompanied Daniel Boone (q.v.) on the latter's third exploration, and stopping at Watauga (now Elizabethton, Tenn.), planted corn. In 1770 he returned thither with a band of North Carolinian settlers. The settlement soon numbered some 200. Both North Carolina and Virginia asserted jurisdiction over it, but neither colony offered protection; and it was left an independent outpost of civilization. With John Sevier, Robertson became the head of the communities which gathered about the Holston and Watauga. In 1777 he was commissioned agent of North Carolina among the Cherokees, and during his residence of more than a year thwarted the British agent and kept at peace the great body of Cherokees and Creeks. With a party of settlers he set out in 1779 for the French Lick of the Cumberland, and on Dec. 25 made the beginnings of a town on the site of Nashville, then 15 days' journey from the westernmost white confines. A fort built, a military organization was made, with Robertson as colonel. He de-

tached the Chickasaws and Choctaws from their English alliance and concluded a treaty with the Cherokees. He also defended the settlement against the Creeks, who were abetted by the Spanish authorities of Louisiana; and refused to organize a separate state in alliance with Spain. In 1790 Robertson was commissioned United States brigadier-general, and latterly he was government Indian agent. He was well fitted for his frontier career, and especially successful in his dealings with the savages. His favorite saying, 'Man proposes, but God disposes, he always insisted was somewhere in the Book of Job. Consult the *Life,* by Putnam (1859); Gilmore, *The Rear Guard of the Revolution* (1886).

ROBERTSON, James Burton: English historian: b. London, 1800, Nov. 15; d. Dublin, 1877, Feb. 14. He was educated at the Roman Catholic College of St. Edmund, near Ware, and was called to the bar in 1825. Later he studied literature, philosophy, and dogmatic theology in France. His first important publication was a translation of Frederick Schlegel's *Philosophy of History* (1835). He lived in Germany in 1851-4, and here produced a translation of Möhler's *Symbolism or Exposition of Doctrinal Differences Between Catholics and Protestants* (1843), a work which made a deep impression on the Tractarians. In 1855 J. H. Newman, then rector of the Catholic University at Dublin, called him to the chair of geography and modern history and later the department of English literature was assigned him. His original works comprise lectures *On Subjects of Ancient and Modern History* (1859); *On Subjects of Modern History and Biography* (1864); on the *Writings of Chatcaubriand, and on the Illuminati, Jacobins, and Socialists; On the Life, Writings and Times of Edmund Burke* (1869), together with poetry and translations.

ROBERTSON, James Craigie: Scottish clergyman: b. Aberdeen, Scotland, 1813; d. Canterbury, England, 1882, July 9. He was graduated from Cambridge in 1834, and took orders in the Anglican Church, in 1836. He was made canon of Canterbury in 1859, and from 1867-74 was professor of ecclesiastical history at King's College, London. He published: *How Shall We Conform to the Liturgy* (1843); *Church History* (1852-73); edited Heylyn's *History of the Reformation* (1849); *Materials for the History of Archbishop Thomas Becket* (1875-82); etc.

ROBERTSON, James Logie: Scottish educator and author: b. Milnathort, Kinross-shire, 1846, Sept. 18. He was educated at Edinburgh University, and has been first English master at Edinburgh Ladies' College from 1891. He has published *Horace in Homespun* (1886); *Ochil Idylls* (1896); *Adaptations from Dunbar* (1895); *In Scottish Fields* (1890); *A History of English Literature* (1894). He has also edited editions of Scott (1894) and Burns (1896); *The Select Chaucer* (1902); etc.

ROB'ERTSON, JOSEPH, LL.D.: most accomplished Scottish antiquary of the 19th c.: 1810, May 17—1866, Dec. 13; b. Aberdeen. He was educated at the Marischal College. The law was his intended profession, but he early turned to literature, especially to Scottish history and antiquities. He went to reside in Edinburgh, and later (1839) in Aberdeen as editor of the *Aberdeen Constitutional* newspaper; and in 1843 went to Glasgow as editor of the *Glasgow Constitutional* newspaper. In 1849 he returned to Edinburgh, to edit the *Edinburgh Evening Courant.* In 1853 he was appointed to the office now known as that of Curator of the Historical Dept. of the Register-house at Edinburgh; and projected a series of works connected with the history of Scotland, similar to those in England under direction of the master of the rolls: of this series several vols. have appeared. During his years of editorial labor he produced numerous compilations, and original works of great importance to Scottish archeology: among these are histories of various shires; an article on Scottish Abbeys and Cathedrals (*Quarterly Review*, 1849, June)—a text-book on that subject; numerous articles for *Chambers's Encyclopædia;* and a valuable compilation, with preface, giving information on many of the controversies connected with the life and reign of Mary Queen of Scots. The last and most important of R.'s works was *Concilia Scotiæ* (2 vols. 1866) for the Bannatyne Club, which has done for the Scottish Church that which Archdeacon Wilkins did for the Church of England in *Concilia Magnæ Britanniæ et Hiberniæ.* It contains the statutes of all the Scottish councils, provincial or diocesan, from the earliest period to the Reformation, printed carefully from the best authorities; and the Preface, which occupies the greater part of the first vol., is a learned and authentic history of everything bearing on the subject. No literary man of his time was held in higher esteem.

ROB'ERTSON, WILLIAM: historian: 1721, Sep. 19—1793, June 11; b. in the county of Edinburgh, Scotland, and in the parish of Borthwick, of which his father was minister. He went to school at Dalkeith, a few miles from his home; but 1733, his father's appointment to a charge in Edinburgh gave him the opportunity of attending school and afterward the univ. there. He was licensed as a preacher in the Church of Scotland 1741; and 1743 was ordained to the parish of Gladsmuir, where the battle of Prestonpans was to be fought two years afterward. In 'the '45,' he showed his zeal for the govt. cause by joining a body of volunteers in Edinburgh; and when the majority of his comrades saw that it was useless for them to attempt to defend the town, he, with a few whom he had infected with his ardor, went to offer their services to Sir John Cope, but the offer was declined. R. afterward became a leader in what was called 'the Moderate' side in the ecclesiastical courts; and 1758 was promoted to one of the Edinburgh charges, where he had increased opportunities of in-

fluence. In 1759, he published his famous *History of Scotland.* He avowedly passed over the earlier periods, speaking of them as 'dark and fabulous,' which no doubt they were in the hands of those who had treated them; but it may be regretted that R. did not bring his acuteness to bear on the materials for their elucidation. In 1762, he was made principal of the Univ. of Edinburgh. In 1769, he published *History of the Reign of the Emperor Charles V.*, to which he prefixed a *View of the State of Society in Europe from the Subversion of the Roman Empire to the Beginning of the Sixteenth Century.* This is the most valuable of his works. The field has been often since traversed by authors who have discovered much new material, but their use of it has become a sort of tribute to the natural sagacity of Robertson. His *History of America* was published 1777. These works are admirable for their elegant and vigorous style. He was a genial man, with a large circle of friends. He had great conversational powers, which he was not averse to display. Interesting notices of his early life are in the autobiography of his friend Dr. Carlyle; and a sketch of his closing years is in Lord Cockburn's *Memorials of His Life and Times.*

ROBESPIERRE, *ro'bès-pēr*, F. *ro-bès-pe-ār'*, MAXIMILIEN MARIE ISIDORE DE: 1758, May 6—1794, July 28; b. Arras, where his father was an unsuccessful advocate. Having distinguished himself at the college of his native place, he was sent, through the influence of a canon of the cathedral of Arras, to complete his education in Paris, at the College of Louis le Grand; where, by singular chance, he was fellow-student with Fréron and Camille Desmoulins. In his studies, he was noted for diligence, regularity, and intelligence; and on completion of his course at college, he studied jurisprudence, and after some years returned to Arras to follow the profession of his father. In this his success was decided; and previous to the commencement of his more public career, he had gained considerable local note. While sedulously attending to his professional duties, he cultivated literature, not wholly without distinction; and 1783 became a member of the Acad. of Arras. Of the verses which at this time he seems to have been fond of writing, some curious fragments are preserved. Having, it is said, in discharge of his duty as member of the criminal court, been obliged to condemn a culprit to death, he resigned his situation on a point of conscientious objection to the barbarity of capital punishment—an incident piquant in its contrast with subsequent portions of his history. On the memorable convocation of the states-general 1789, he had local influence sufficient to secure his election as one of the deputies of the *tiers-état*, in which capacity he immediately repaired to Versailles. In the assembly he was for some time of little account; but gradually he made for himself a position, and nice observers noted in him a quality of fanatical earnestness and conviction.

In virtue of which they surmised for him a great career. 'This man,' said Mirabeau in particular, 'will go far, for he believes every word he says.' (*Cet homme ira loin, car il croit tout ce qu'il dit.*) Though in the constituent assembly he spoke frequently, and—despite the disadvantages of a mean person, a harsh, shrill voice, and an ungainly manner—always with increasing acceptance, it was outside as a popular demagogue and leader in the famous Jacobin Club that his chief activity was exerted; and in this field his influence speedily became immense. After the death of Mirabeau, whose giant figure, while he lived, seemed to dwarf all meaner men, his importance became more and more recognized; and thenceforward till his death, his biography is in effect the history of the revolution. 1791, May, he proposed and carried the decree by which members of the assembly were excluded from a place in the legislature which followed; a measure obviously disastrous, as lowering the quality of the assembly, and more and more insuring its subjection to the Jacobins, of whom R. was now the favorite. His early aversion to capital punishment has been spoken of; and it is curious enough to be noted that now, May 30, he delivered an oration against it in the Assembly, denouncing it as 'base assassination.' On the dissolution of the constituent assembly 1791, Oct., R., now famous, revisited his native town, where he was received with enthusiasm; an escort of the national guard did honor to his entrance, and a general illumination of the place testified the admiration of the citizens for their deputy. After a stay of seven weeks, he returned to Paris, and resumed his activity as a leader of the Jacobin Club. In the *émeute* of August 10 following, by which the king was dethroned, he took no prominent part; and though his complicity is suspected in the September massacres which ensued, no distinct share in the infamy has ever yet been proved against him. To the national convention, which was now formed, he was returned at the head of the Paris deputies; and as recognized chief of the extreme party called the Mountain (q.v.), he was one of the main agents in procuring the execution of the king 1792, Dec. In the following year occurred his final struggle with the Girondists, who, recoiling in alarm from the extreme to which they saw R. tending, had twice before attacked him with a view to compass his destruction, and the chief men among whom he now triumphantly sent to the scaffold. The period of 'the Terror' followed: Marie Antoinette and the infamous Duke of Orleans were the first victims; Pétion, Danton, and Camille Desmoulins were next beheaded, on a suspicion of favoring a reactionary policy; and for months, under the so-called Committee of Public Safety, Paris became the scene of an indiscriminate *quasi*-judicial slaughter, in which thousands of lives were sacrificed. With these enormous atrocities, the name of R., with those of his friends, Couthon and St. Just, remains peculiarly asso-

ciated. In the midst of the horror, took place 1794, June 8, that strange *Fête de l'Être Suprême*, in which, in the name of the Republic, the existence of a Deity was decreed—a day of triumph for R., who, conspicuous as the first man in France, presided at the solemn mummery. But the end was near; men were weary of 'the Terror,' and the general sense of insecurity that it induced; R. had many enemies; in particular, the numerous friends of Danton were eager to avenge his death; a conspiracy was organized against 'the tyrant,' as he was now called, and after a fierce tumult in the convention, his arrest was accomplished. A rescue by the populace followed, but he lacked the courage and promptitude to turn his opportunity to account; while he hesitated, his enemies acted, and 1794, July, he closed his career on the scaffold to which he had sent so many others.

Though without great and heroic qualities, R. can scarcely have been the mean and contemptible creature that he has frequently been represented. The instant effect of his oratory we know; and even as read, his speeches command respect for his mental power. The subtlest practical tact and judgment he must plainly have possessed; and though timid in his own person, he was dexterous to appropriate the results obtained by the boldness of others. In principle, he was severe and consistent; and the title of 'Incorruptible,' which he early acquired, seems throughout to have been thoroughly deserved. In private life, he was amiable; and though he waded to his public ends through blood, he had not the savage joy in the shedding of it which it has been common to attribute to him. He was callous, not actively cruel; and during the time of 'the Terror,' it is simply the truth, that he was rather reluctantly acquiescent, than active in the atrocities for which he has since been held above all others responsible. 'Death—always death!' he is said to have frequently exclaimed in private, 'and the scoundrels throw it all on me! What a memory shall I leave behind me, if this lasts! Life is a burden to me.' For a candid view of his character on this and its other sides, see the work by G. H. Lewes—*Life of Maximilien Robespierre, with Extracts from his Unpublished Correspondence* (London, Chapman and Hall 1849). See also Histories of Thiers, Mignet, Carlyle, Michelet, Louis Blanc; and Ernest Hamel's *Vie de Robespierre* (Par. 1865).

ROBIN, n. *rŏb'ĭn* [from *Robin*, the familiar corruption of *Robert*]: one of the most familiar of wild birds, called in Britain *robin-redbreast* (see REDBREAST), of family *Erythacinæ*, and sometimes given as Blue Robin to the Bluebird (q.v.) in America. It is in America the usual name also of a species of Thrush (q.v.), *Turdus migratorius*, of family *Turdidæ*, widely distributed from Mexico to lat. 60° n. The Amer. R. is nearly twice the size of the redbreast, olive gray, top and sides of the head black, chin and throat white with black streaks, under parts chestnut brown. It remains during winter in sheltered places, even as far n. as New England, but is generally a bird of passage. Many arrive in New England before the snow has disappeared. Large flocks are seen in the southern states in winter, where great numbers are killed for the table, the markets being often glutted with them. In Mass., the law forbids the killing of this bird at any season of the year. Its nest is often built near houses. Two broods are produced in the year. The robin is a lively bird, and a general favorite in the northern United States. It is often kept as a cage-bird, is very gentle and easily tamed, and has a pleasing song, a cheery whistling, enlivening in the early morning hours, but less varied and melodious than that of others of the thrush family. The R. is sometimes persecuted for its greedy attacks on cherries and small fruits, but its musical and insectivorous services may well be repaid by planting more fruit for its benefit.

ROBIN GOODFELLOW, *rŏb'ĭn gŭd'fĕl-lō:* name in old English superstition of a domestic spirit or fairy, analogous to the *Nisse God-dreng* of Scandinavia, the *Knecht Ruprecht*, i.e., Robin, of Germany, and the *Brownie* of Scotland. Roguery and sportiveness were the characteristics of this spirit; and in the reign of Elizabeth, his existence was so generally credited, that he was 'famozed in every old wives chronicle for his mad merrye pranks.' From the popular belief in this spirit Shakespeare's *Puck* was derived. From the early ballads concerning R., we learn that he was the offspring of a 'proper young wench by a hee-fairy,' who was no less a person than Oberon, king of Fairyland. In his youth, R. displayed such mischievous tricks that his mother found it necessary to promise him a whipping. He ran away from home, and engaged with a tailor, from whom also he eloped. When tired, he sat down, and fell asleep, and in his sleep he had a vision of fairies. On awaking, he found lying beside him a scroll, evidently left by his father, which, in verses written in letters of gold, informed him that he should have anything he wished for, and also the power of turning himself into various shapes; but he was to harm none but knaves and queans, and was to 'love those that honest be, and help them in necessity.'

As a specimen of his 'mad prankes,' R. went one day to a wedding as a fiddler, and was a welcome guest; but in the evening 'then hee beganne to play his merry trickes in this manner. First, hee put out the candles, and then being darke, hee strucke the men good boxes on the eares;

they, thinking it had beene those that did sit next them, fell a-fighting one with the other, so that there was not one of them but had either a broken head or a bloody nose. At this, Robin laughed heartily. The women did not scape him, for the handsomest he kissed: the others he pinched, and made them scratch one the other, as if they had beene cats. Candles being lighted againe, they all were friends, and fell againe to dancing, and after to supper. Supper being ended, a great posset was brought forth. At this, Robin's teeth did water, for it looked so lovely that hee could not keepe from it. To attaine to his wish, he did turne himself into a beare: both men and women seeing a beare amongst them, ranne away, and left the whole posset to Robin. He quickly made an end of it, and went away without his money, for the sport hee had was better to him than any money whatsoever.'

Although R. was a sprite particularly fond of disconcerting and disturbing domestic peace, he was believed to be easily propitiated. If a bowl of milk, or curds and cream, were duly laid out for him, he would at midnight perform for the servants many household duties. If this were neglected, R. would revenge himself by pinching and otherwise annoying the inmates. The following passage in Shakespeare's *Midsummer Night's Dream* fully describes R.'s peculiarities:

> Either I mistake your shape and making quite,
> Or else you are that shrewd and knavish sprite
> Call'd Robin Goodfellow: are you not he
> That frights the maidens of the villagery;
> Skims milk, and sometimes labors in the quern,
> And bootless makes the breathless housewife churn;
> And sometimes makes the drink to bear no barm;
> Misleads night-wanderers, laughing at their harm?
> Those that Hobgoblin call you, and sweet Puck,
> You do their work, and they shall have good luck.

The *Mad Pranks and Merry Jests of Robin Goodfellow* were reprinted from the ed. of 1628, by the Percy Soc, 1841.

ROBIN HOOD, see Hood, Robin.

ROBINIA, *rō-bĭn'ĭ-a:* genus of trees and shrubs of nat. order *Leguminosæ*, suborder *Papilionaceæ*, having a 4-fid calyx, with the upper segment divided into two; stamens, nine united, and one free; the pod long and many-seeded. The species are widely diffused over the world. The most important is *R. pseudacacia*, a N. American tree, called sometimes the *Locust Tree* (q.v.), known also as the *False Acacia*, or *Thorn Acacia*, often simply *Acacia*. It was raised from seed in France by John Robin, about 1600, and gradually spread over warmer parts of Europe and s. Sibera. Its quick growth, its spines, and its property of submitting to be clipped into any form, make it suitable for hedges. In s. Europe, it thrives as a timber tree, but in more northern regions, it suffers from frost in severe winters. The wood is compact, hard, and takes a fine polish; for many purposes, it is scarcely inferior to oak, which it rivals in toughness and strength. It does not readily rot in water, and is used for ship-building; in many of the states it has been largely employed for fence posts,

on account of its durability. For this purpose, as well as for shade, it was extensively planted on the prairies, but was temporarily destroyed and has been continuously injured by the locust-boring beetle, *clytus robiniæ*, which swept westward like a great wave, arriving in central Iowa 1867, and so curiously resembles another and harmless species that the two are hardly distinguishable. The tree is ornamental, and of rapid growth. It is found wild in abundance from the Alleghanies to the western plains, but not indigenous n. of Penn., nor near the coast. Its leaves are pinnate, with 9–13 thin and smooth leaflets. The flowers are fragrant and white, in large pendulous racemes. The roots throw up many suckers; and are very sweet, affording an extract resembling licorice. An agreeable syrup is also made from the flowers.—*R. viscosa* is a smaller tree, but even more ornamental, a native of s.w. parts of the Alleghany Mountains: it has scentless flowers, white tinged with pink, and is planted for ornament, with the common name Clammy Locust: the young branches are viscid.—The Rose Acacia (*R. hispida*) is a native of the s.w. ranges of the Alleghanies, a highly ornamental shrub, with hispid branches, and large rose-colored scentless flowers. Its suckering habit is avoided by grafting it on the common locust, this method also giving height and increased beauty.—*R. Caragana*, native of s.e. Europe, is planted for hedges at St. Petersburg, where it spreads like an indigenous plant.

ROBINS, *rŏb'ĭnz*, Benjamin: English mathematician and artillerist: 1707–51, July 29; b. Bath; of parents who belonged to the Society of Friends, and were too poor to give their son a good education. R., however, having obtained a little instruction in mathematics, prosecuted this science with great zest, acquired a good elementary knowledge of it, and established himself at London as a teacher of mathematics, still pursuing various studies. He then began the series of experiments on the resisting force of the air to projectiles, which gained him celebrity, varying his labors by the study of fortification, in which pursuit he visited many of the most celebrated works of this class in Flanders. In 1734 he demolished, in a treatise *A Discourse concerning the Certainty of Sir I. Newton's Method of Fluxions*, the objections brought by the renowned Berkeley, Bp. of Cloyne, against Newton's principle of ultimate ratios. He published several other mathematical works. His great and valuable work, the *New Principles of Gunnery*, to whose preparation he gave enormous labor, appeared 1742, and produced a revolution in gunnery. Previous to R.'s time, it had never been attempted to estimate the velocity of balls otherwise than by the ordinary parabolic theory of Galileo (see Projectiles). R. suggested two methods for obtaining this information—(1) by finding experimentally the initial force of fired gunpowder confined to a certain space, and the law of the decrease of this force as the space increased; thence calculating the velocity which would be imparted to a body of given weight: (2) by the *Ballistic Pendulum*. The second method has been found

in practice preferable for accuracy. R., in the course of his experiments, also discovered and explained the curvilinear deflection of a ball from a vertical plane. Some of his opinions having been questioned in *Philosophical Transactions*, R. ably replied and wrote several dissertations on the experiments made by order of the Royal Soc. 1746-7, for which he received their annual gold medal. In 1749 he was appointed 'Engineer-in-general to the E. Indian Co.;' but after the completion of his first undertaking he was seized with a fever and died.

ROBINSON, *rŏb'ĭn-son*, BEVERLY: 1723-92; b. Va.; son of John R. He was in the English army at the assault on Quebec, opposed the movement of the colonies to secure independence, removed to New York, raised and became col. of a regt. of loyalists, was prominent in diplomatic efforts to uphold the royal cause, and was closely connected with the treason of Benedict Arnold. After the war he removed to New Brunswick, was elected to the first colonial council, but declined to serve, and afterward settled in England. His wife, a dau. of Frederick Phillipse, of N. Y., was very wealthy; but, on account of her husband's adherence to the royalists, her property was confiscated by the state. This loss was compensated by a gift from the British govt. to R. of about $85,000. He died in England.

ROB'INSON, CHARLES SEYMOUR, D.D., LL.D.: b. Bennington, Vt., 1829, Mar. 31. He graduated from Williams College 1849; studied theology at New York and Princeton; became pastor of a Presb. church at Troy, N. Y., 1855; accepted the pastorate of the First Presb. Chh., Brooklyn, 1860; was in charge of the American Chapel in Paris 1868–70; and pastor of the Madison Ave. Presb. Church, New York, 1870-87. In 1889 he established in New York a weekly religious paper, *Every Thursday;* and 1891 became pastor of the Thirteenth Street Presb. Church in that city. He published *Sermons*, of which several editions were called for; several hymn and tune books for Church and Sunday-school use. Among his hymn-books are *Songs for the Sanctuary* (1865); *Spiritual Songs for Social Meetings* (1881); *Laudes Domini* (1884); and among his other works, *The Pharaohs of the Bondage and the Exodus* (1887); and *Simon Peter, his Life and Times*, 2 vols. (1888). Died, 1899, Feb. 1.

ROB'INSON, EDWARD, D.D., LL.D.: philologist and biblical scholar: 1794, Apr. 10—1863, Jan. 27; b. Southington, Conn. He graduated at Hamilton College, Clinton, N. Y., 1816, where he was engaged as tutor, and in further studies until 1821, when he went to Andover, Mass., to superintend the printing of an ed. of the first six books of the *Iliad*. Previous to this he had married, and become a

widower. He studied Hebrew with Prof. Moses Stuart of Andover Theol. Seminary, and became his assistant professor. In 1826 he began four years' travel and study in Europe, where he married Miss Therese A. L. von Jakob daughter of a prof. at Halle. Returning 1830 to Andover, he was appointed extraordinary prof. of sacred literature, and librarian in the seminary. He resigned 1833, removed to Boston, and 1837 was appointed prof. of Biblical literature in the Union Theol. Seminary, New York. At this period, he made, in company with the Rev. Eli Smith, an extensive survey of Palestine, of which he gave an account in his admirable work, *Biblical Researches in Palestine and Adjacent Countries* (3 vols. 8vo, Halle, London, and Boston, 1841)—which will always remain a standard work on the subject. He entered on the active duties of his professorship 1840; and 1852 made a second visit to Palestine, of which he published an account 1856. His other works are a translation of Buttman's *Greek Grammar*, 1832 and 50; *Greek and English Lexicon of the New Testament*, 1836 and 50; *Harmony of the Four Gospels*, in Greek 1845, and in English 1846. He was editor of the *Biblical Repository*, *Bibliotheca Sacra*, Calmet's *Bible Dictionary*, a translation of Gesenius's *Hebrew Lexicon*, etc.; and was an active member of geographical, oriental, and ethnological societies.

ROB'INSON, Ezekiel Gilman, d.d., ll.d.: 1815, Mar. 23—1894, June 13: educator; b. Attleborough, Mass.; graduated from Brown Univ. 1838; studied theology at Newton, Mass.; was pastor of a Bapt. church at Norfolk, Va., 1842–45, and part of this time was chaplain of the Univ. of Virginia; preached in Cambridge, Mass., a few months; and 1846 was called to a professorship in the Western Theol. Seminary (Bapt). After a pastorate in Cincinnati 1850-53, he became prof. in the Rochester Theol. Seminary (Bapt.), was pres. of that institution 1860–72, and pres. of Brown Univ. 1872–89. He edited the *Christian Review* for several years, has published sermons, addresses, and articles in magazines, and *Yale Lectures on Preaching* (1883); and *Principles and Practice of Morality* (1888).

ROB'INSON, Henry Crabb; 1775, May 13—1867, Feb. 5; b. England. After studying law in London, he went to the German universities, where he spent five years in the study of literature and philosophy, and became intimately acquainted with Schiller, Goethe, and other great German poets and scholars. In the peninsular campaign 1808, he was in Spain as correspondent of the London *Times*, for which paper he afterward became a literary critic and editorial writer. He practiced law 1813–28 with great success, and accumulated a fortune. He was intimate with several prominent literary men, including Wordsworth, Coleridge Southey, and Lamb, was one of the founders of the Flaxman Gallery, and was interested in various literary institutions. His *Diary and Correspondence*, pub. a few months after his death, had wide circulation. He died at London.

ROB'INSON, James Sidney, soldier: b. Ohio, 1827, Oct. 14. He became a printer, 1846 began the publication of the Kenton *Republican*, of which he was editor for many years, and was prominent in the early history of the republican party in Ohio. He entered the army 1861 as a private, but was soon promoted capt., was in the Shenandoah valley with Gen. Fremont, at the second battle of Bull Run, Cedar Mountain, Chancellorsville, was badly wounded at Gettysburg, and led a brigade in the Atlanta campaign. By various promotions he reached the rank of brig.gen., he was brevetted maj.gen.; and 1865, Aug. 31, was mustered out of the service. He was commissioner of railroads and telegraphs for Ohio, was member of congress 1881–85, and sec. of state of Ohio four years from 1885. He d. 1892, Jan. 14.

ROB'INSON, John: English pastor of the Plymouth Pilgrims before their emigration: 1575–1625, Mar. 11; b. probably near Scrooby, Nottinghamshire; entered Corpus Christ Coll., Cambridge 1592, becoming fellow 1599. Officiating first in the Established Church near Yarmouth in Norfolk, he became minister to a dissenting church at Norwich 1602. Although Protestantism was confirmed under James I; who succeeded to the throne the year following, yet dissenters from the Church of England were oppressed; and the Norwich congregation, after arrest and detention, emigrated to Amsterdam 1608, and the next year moved to Leyden, where they remained 11 years, and, by accessions from exiles, reached the number of 300. Of this band John Robinson continued to be pastor, highly regarded for piety and learning by the Leyden clergy and univ. professors, having with one of the latter, Episcopius, a learned controversy on free-will. Abp. Laud found means through the Dutch govt. to molest the pastor and flock, who therefore resolved to migrate to the new world, and gained a covert approval therefor from King James. In 1620, at a day of fasting and prayer, and a sermon from the pastor (his text I Sam. xxiii. 3–4), it was resolved that a part of the congregation should go, to prepare the way for the rest, Elder Brewster to be leader. When embarking at Delftshaven, June 21, their pastor knelt with them on the deck, commending them to God. On reaching England, one of the vessels in which they sailed from Southampton proved unseaworthy, and both vessels put into Dartmouth; the number was reduced from 120 to 101, who, after being obliged to put into Plymouth for repairs, voyaged to America in the other vessel, the *Mayflower*. John Robinson had charged them to be faithful; and their subsequent history in the new Plymouth bore fruits of his teaching and of the influence of his singularly pure and noble character. He expected to follow, but died before consent was obtained from the English mercantile company who were patrons of the enterprise. His sons, John and Isaac, and the rest of the church, came to Plymouth subsequently. Among his published writings were *Justification of Separation from the Church of England* (1610); *Of Religious Communion* (1614); *Apologia Justa et Necessaria*

(1619—transl. 1644); *Defense of the Doctrine Propounded by the Synod of Dort* (1624); *Essays or Observations, Divine and Moral* (1628); *Treatise of the Lawfulness of Learning of the Ministers of the Church of England* (1634). His complete works, with memoir, were published by Robert Ashton 1851, London and Boston.

ROB'INSON, JOHN CLEVELAND: soldier: b. Binghamton, N. Y., 1817, Apr. 10. He took a partial course of study at West Point, studied law, became 2d lieut. of infantry 1839, served in Texas 1845, and won distinction in the Mexican war. He was engaged in the Seminole war, in the expedition to Utah, held Fort McHenry near Baltimore for the Union 1861; and after serving in Mich. and O. was connected with the Army of the Potomac. He was prominent in the battles of Fredericksburg, Gettysburg, and the Wilderness, and while leading a brilliant charge at Spottsylvania Court-house received a wound which resulted in the loss of one of his legs and disabled him for service in the field, He was mustered out of the vol. service 1866, and afterward commanded various departments. He had been often brevetted and promoted; and 1869 was retired with the rank of maj.gen. He was elected lieut.govt. of N. Y, 1872, was commander-in-chief of the Grand Army of the Republic 1877–8, and 1887, was elected pres. of the Soc. of the Army of the Potomac. Died 1897, Apr. 10.

ROB'INSON, THERESE ALBERTINE LOUISE (JAKOB): 1797, Jan. 26—1870; b. Halle, Germany; daughter of Prof. von Jakob, and wife of Edward R., D.D. She was known to the world of letters as 'Talvi,' a name composed of her initials. In 1807 she accompanied her father to Russia, where he had an appointment as prof. in the Univ. of Kharkov. In 1810 they removed to St. Petersburg, where she learned modern languages and history. In 1816 they returned to Halle, and there she studied Latin, and wrote a volume of tales, published 1825 under the title *Psyche;* and under the signature of 'Ernest Berthold,' translations of Sir Walter Scott's *Black Dwarf and Old Mortality*, and also two volumes of Servian popular songs—*Volkslieder der Serben.* In 1828 she was married to Prof. Robinson, and 1830 accompanied him to America, where she studied the languages of the aborigines, translated Pickering's *Indian Tongues* into German, and contributed a *Historical View of the Languages and Literature of the Slavic Nations* to the *Biblical Repository.* In 1837 she accompanied her husband back to Germany, and published *An Essay on the Historical Characteristics of the Popular Songs of the German Nations, The Poems of Ossian not Genuine,* a *History* of *Captain John Smith,* in German, also *The Colonization of New England,* translated into English by the younger Hazlitt. Returning to New York, she wrote in English, *Heloise, or the Unrevealed Secret; Life's Discipline, a Tale of the Annals of Hungary*; *The Exiles;* and numerous contributions to German and American periodicals. She died at Hamburg.

ROBISON, *rŏb'i-son*, JOHN: Scotch natural philosopher: 1739–1805, Jan. 28; b. Boghall, parish of Baldernock, Stirlingshire. He took his degree at the Univ. of Glasgow 1756. After two sea-voyages, he went to Glasgow to begin divinity study. But his strong predilection for physical science led him to pursue its study with such success that when Black was transferred to the Univ. of Edinburgh 1766, R. succeeded him. In 1770 his old friend, Admiral Knowles, having been appointed by the Czarina Catharine II. to reform the shipbuilding and naval administration of Russia in the position of pres. of the Russian board of admiralty, chose R. to accompany him as sec. After several years in Russia, where he received from the govt. much honor and profit, R., refusing flattering offers to remain, accepted 1774 the chair of nat. philos. in Edinburgh. R.'s talents and acquirements were of a high order; but his diction was too rapid, and he unfortunately disapproved of experiments. His contributions to the *Encyclopædia Britannica* of that time were the means of elevating that work to the rank of a trustworthy book of scientific reference. He edited and published various works on chemistry and mechanical science.

ROB ROY, popular name of ROBERT M'GREGOR: celebrated Scottish outlaw, whose adventures entitle him to be considered the Robin Hood of Scotland: b. between 1657 and 60, d. abt. 1738; second son of Donald M'Gregor of Glengyle, by a daughter of Campbell of Glenlyon. R. R., in consequence of the outlawry 1660 of the clan M'Gregor of the Scottish parliament, assumed the name of Campbell. In Gaelic, *Roy* signifies *red*, and was applied to him from his ruddy complexion and color of hair. R. R. received a fair education, and in youth was distinguished for skill in use of the broadsword, in which the uncommon length of his arms was an advantage. It was said that he could, without stooping, tie the garters of his Highland hose, two inches below the knee. Like many Highland proprietors of the period, R. R. dealt in grazing and rearing black-cattle for the English market. He took a tract of land for this purpose in Balquhidder; but his herds were so often stolen by banditti from Inverness, Ross, and Sutherland, that, to protect himself, he maintained a party of armed men, to which may be attributed his later war-like habits. He also protected his neighbors' flocks, in return for which he levied a tax, which went under the name 'black mail.' R. R. married a daughter of the laird of Glenfalloch, shortly after which he acquired the estates of Craig Royston and Inversnaid, near the head of Loch Lomond. In consequence of losses in unsuccessful speculations in cattle, for which he had borrowed money from the Duke of Montrose, R. R. lost his estates, which were seized by the duke for debt. R. R., rendered desperate by his misfortunes, collected about 20 followers, and made open war on the duke, sweeping away all the cattle of a district and intercepting the rents of his tenants. That this could happen at so late a period, and in the immediate neighborhood of the garrisons of Stirling, Dumbarton, and Glasgow, ap-

pears almost incredible; but R. R. had the protection of the Duke of Argyle and the respect of the country people, who gave him timely information of the designs of his enemies. Numberless stories are still current in the neighborhood of Loch Lomond and Loch Katrine of his hairbreadth escapes from capture by the troops. At one time a reward of £1,000 was offered for his head, in consequence of which he was obliged to take shelter in a cave at the base of Ben Lomond, on the banks of the lake, which had in former times afforded secure retreat to Robert the Bruce. Many instances have been recorded of his kindness to the poor, whose want he often supplied at the expense of the rich. R. R. was not the commonplace *cateran* that many people think him. He gave his sons a good education, and died peaceably in his bed. His funeral was attended by all the people of the district, except the partisans of his enemy, the Duke of Montrose. R. R.'s exploits have been immortalized by Sir Walter Scott in his novel *Rob Roy*, 1817. In the list of subscribers to Keith's *History of the Affairs of Church and State in Scotland*, 1734, there occurs the name 'Robert Macgregor, *alias* Rob Roy.' See Macleay's *Rob Roy* (1881); Millar's (1883).

ROBUST, a. *rō-bŭst'* [F. *robuste*—from L. *robustus*, hard, solid, strong—from *robur*, a very hard kind of oak, strength: It. *robusto*]: strong; hardy; vigorous; possessing perfect strength and vigor. ROBUST'LY, ad. *-lĭ*. ROBUST'NESS, n. *-nĕs*, strength; vigor.—SYN. of 'robust': strong; sturdy; hale; stout; hearty; vigorous; sound; muscular; sinewy; lusty; coarse.

ROBUS'TI, JACOPO: see TINTORETTO.

ROBUSTIOUS, a. *rō-bŭst'yŭs* [L. *robustĕus* (see ROBUST)]: in *OE.*, and *now familiarly*, strong; vigorous; sinewy; boisterous; violent. ROBUST'IOUSLY, ad. *-lĭ*. ROBUST'IOUSNESS, n. *-yŭs-nĕs*, quality of being robustious.

ROC, or ROCK, n. *rŏk*, or RUKH, *rŭk* [Ar. *rukh*]: fabled monstrous bird in Arabian mythology, represented as 'able to truss an elephant' in its talons. It is enough to refer to the *Arabian Nights' Entertainments*, as to the size and power of the Roc. A belief in its existence prevailed throughout the middle ages, and it is noticed in many works of that period. The fables concerning the R. may have originated in exaggerated stories of some of the great eagles, or of the Lammergeier.

ROCAMBOLE, n. *rŏk'am-bōl* [F. *rocambole;* Ger. *rockenbollen*—from *rocken*, rye; *bolle*, a bulb]. (*Allium scorodoprasum*): plant of the same genus with garlic, onion, leek, etc., and nearly allied to garlic, which it resembles in its habit, though larger in all its parts. The upper part of the stem is in general spirally twisted before flowering The root forms rounder cloves than those of garlic, and of much milder flavor; the umbels also are bulbiferous. R. has long been cultivated in kitchen-gardens though not very common. It is a native of sandy soils in Denmark and other countries near the Baltic.

ROCCELLIC, a. *rŏk-sĕl'lĭk* [It. *rocca*, a rock, because the plant grows on rocks (see Rock 1)]: name for a fatty acid obtained from the herb Archil (q.v.), the *Roccel'la tinctŏrĭă*, ord. *Līchēnēs*.

ROCHAMBEAU, *ro-shŏng-bō'*, Jean Baptiste Donatien de Vimeur, Comte de: soldier: 1725, July 1—1807, May 10; b. Vendôme, France. He studied at the Jesuit College at Blois, intending to enter the priesthood, but on the death of his elder brother changed his plans, and 1742 entered the French army. He served in Bavaria and Bohemia, was rapidly promoted, and became famous for skill in drilling troops. In 1749 he became gov. of Vendôme, was in active military service in Minorca 1756, and in Germany 1758–61, reached the rank of lieut.gen. 1780, and was given command of the French troops which aided the American colonies in securing their independence. Congress thanked him for his efficient services, and presented him with two of the cannon which had been taken from the British, and Louis XVI. made him a knight of the Saint Esprit. Returning to France, he was gov. of Picardy and Artois, became field-marshal 1791, commanded the Army of the North, but became unpopular at the time of the revolution and barely escaped with his life. In 1804 he received the grand cross of the Legion of Honor from Napoleon, who also gave him a pension. His *Memoirs*, which he dictated, appeared in 2 vols. (1809), and were translated and pub. in London (1838). He died at Thoré, France.

ROCHDALE, *rŏch'dāl:* thriving manufacturing town of Lancashire, England; market-town and parliamentary and municipal borough, in the valley of the Roche, and on both sides of that stream, 11 m. n.n.e. of Manchester, 200 m. n.w. of London by railway. The parish church, on an eminence, approached by a flight of steps, is a venerable edifice, dating from the 12th c., partly in the late Norman, partly in Perpendicular. The other public buildings comprise churches, chapels, and meeting-houses for the various dissenting sects. The new Town Hall, completed 1867, is a fine building in domestic Gothic. The public baths are the property of the corporation. Many improvements architectural and sanitary have been made in recent years. Still R. is beautiful only in site, and derives its importance wholly from its extensive and varied manufactures. The woolen manufacture, introduced by a colony of Flemings in the reign of Edward III., is prosperous and increasing. Blankets, baizes, kerseys, and other woolen fabrics are staple manufactures. Cotton goods also, especially calicoes, are largely manufactured. In the vicinity, coal is found, and flagstones, freestones, and slates are abundantly quarried. There is good general trade; there are several hat-factories, cotton-mills, machine-shops, iron and brass foundries, etc., weekly markets for woolen goods and grain, and fortnightly fairs for cattle. Commerce is facilitated by abundant means of communication. Pop. (1871) municipal borough, 44,559; (1891) 76,161; (1901) 83,112.

ROCHE, a. n. *rōsh* [F. *roche*, a rock (see Rock 1)]: used in compounds, as roche-alum, often called *rock-alum;* alum deprived of part of its water of crystallization by heat. The name was formerly given to pure alum in mass; but is now applied to a particular variety found at Civita Vecchia, Italy. It is a kind of native alum, free from iron, but having a reddish color, from the soil in which it is found. It is called also Roman, and red alum. A factitious kind is now in general use, made of common alum reddened with Armenian bole.

ROCHEFORT-LUÇAY, *rosh-for'lüs-ā'*, Victor Henri, Comte de: journalist and communist: b. Paris, 1830, Jan. 30. He studied medicine; secured a minor office under the govt. of Paris; and composed a number of plays, some of which became quite popular. In 1861 he became a journalist, and for several years was connected with the *Figaro*, but retired 1865 to prevent the prosecution of its proprietors by the govt. He founded the *Lanterne*, in which his attacks on the govt. were continued so violently as to lead to its suppression, but R. soon re-established it at Brussels. On his election to the chamber of deputies 1869, he returned to Paris and established *La Marseillaise*. Its attacks on the imperial family were so violent that R. was imprisoned; and his assistant, Victor Noir, was killed by Prince Pierre Bonaparte. He was released when the republic was proclaimed 1870, Sep. 4; and became a govt. officer; favored concessions to the Communists, founded 1871 the *Mot d'Ordre*, in which he came out strongly in favor of the Commune, and was elected a deputy to the national assembly. On the overthrow of the Commune he was sentenced to life imprisonment; was released a brief period to be married to the mother of his children, in order that they might be legitimatized; and 1873 was sent to New Caledonia, but soon escaped to San Francisco, whence he went to London, and afterward to Geneva where he remained till 1880, when he was allowed to return to Paris. He then established *L' Intransigéant*, a radical paper, in which he attacked the existing government. He designed to take part in the labor troubles in Belgium 1886, but was not allowed to enter the country. He was prominent in the political schemes of Gen. Boulanger, whom he accompanied to England 1889. In the latter year he removed to Brussels, but returned to Paris under amnesty in 1895. He published *Les Aventures de ma Vie* (1896).

ROCHEFORT-SUR-MER, *rosh-for'sur-mār:* important seaport and naval arsenal of France, dept. of Charente-Inférieure, on the right bank of the Charente, five m. from its mouth. It is surrounded by ramparts, and protected by forts at the mouth of the river; and is a modern, clean, well-built town. Few French towns can compare with R. for the number and importance of its public works. The harbor, one of the three largest in France, is deep enough to float large vessels at low water. R. has fine wharfs, extensive magazines, dock-yards, rope-walks, cannon foundries, and other establishments for manufacture and preservation of naval stores and marine apparatus of every

kind, including extensive bread and biscuit stores. The most celebrated of its many institutions are the marine hospital, founded 1787, with 1,240 beds for seamen, besides wards for invalided officers; the artillery and naval schools for every branch of the profession, and the general civil college. Its great convict-prison has been disused since 1852. In addition to the extensive trade arising from the special character of the place, R. is the centre of the commerce of the dept., and is largely engaged in colonial trade, in manufacture of brandy, and in building men-of-war, merchant-ships, steamers, and coasting-vessels. Pop. (1881) 26,022; (1886) 30,285; (1901) 36,458.

ROCHEFOUCAULD': see LAROCHEFOUCAULD.

ROCHELLE, LA, *lâ ro-shĕl':* fortified seaport of France, cap. of the dept. of Charente-Inférieure; on an inlet of the Bay of Biscay formed by the islands Ré and Oleron, 300 m. s.w. of Paris by railway. Its little harbor, which consists of an outer tidal basin, and an inner wet dock, is surrounded by fine quays and commodious docks, close to which are the principal streets and squares. Many streets are regular and well built, with houses adorned with porticoes and balconies. The notable public buildings are the arsenal, palace, town-hall, exchange, and cathedral. Besides the fine promenade of the Place du Château, there are, outside the city walls, two extensive public gardens, La Promenade du Mail and the Champs de Mars. Shipbuilding is carried on, especially for the Newfoundland fishing trade; there is manufacture of coal, bricks, and cotton yarns, and there are numerous glass-works, sugar-refineries, and distilleries for preparation of brandy. Pop. (1881) 20,028; (1886) 21,591; (1901) 31,559.

R., known till the 12th c. under its Latin name *Rupella*, or Little Rock, of which its present name is the French translation, originated in a colony of serfs of Lower Poitou, who, fleeing from the persecution of their lord, settled on the rocky promontory between the ocean and the neighboring marshes, previously occupied by fishermen only, but which rapidly increased in importance under the new settlers. On the marriage of Eleanor of Aquitaine with Henry II. of England, R., as a part of her dowry, came into the possession of the English kings, by whom it was retained till 1224, when it was taken by the troops of the French king, Louis VIII.; and though it was ceded to England at the treaty of Bretigny 1360, in the subsequent wars it was retaken by France, under whose sway it has remained since 1372. As a stronghold of the Huguenot party, it underwent various attacks and sieges during the religious wars of the Henries, in the latter half of the 16th c.; and on its final and unconditional surrender to the royal troops in the time of Louis XIII., its old fortifications were destroyed, and new lines of defenses subsequently erected by the great Vauban.

ROCHELLE SALT, *rō-shĕl' sawlt:* popular name of sodio-potassic tartrate, $C_4H_4KNaO_6$—$4H_2O$, known also as tartrate of soda and potash. It was discovered, 1672, by a Rochelle apothecary named Seignette. It occurs, when pure, in colorless transparent prisms, generally eight-sided; in taste it is mildly saline. It is prepared by neutralizing cream of tartar (KHC_4O_6) with sodium carbonate N_2CO_3—$10H_2O$. After a neutral solution has been obtained, it must be boiled and filtered, and the resulting fluid must be concentrated till a pellicle forms on the surface, when it must be set aside to crystallize.

This salt is a mild and efficient laxative, and less disagreeable to the taste than most of the saline purgatives. A heaping teaspoontul, or more if found requisite, dissolved in eight or ten parts of water, may be a dose. A drachm of R. S. added to one of the ingredients of an effervescing draught (bicarbonate of soda or tartaric acid, e.g.), forms one of the varieties of Seidlitz powders.

ROCHE MOUTONNEE, n. *rōsh mô-tŏn'nā* [F. *roche,* rock; *mountonnée,* frizzled, woolly—from *mouton,* a sheep]: the name given by French geologists to the projecting eminences of Alpine rocks, and of all glaciated districts (like those retaining features of the Glacial Period), that have been rounded and smoothed by glacier action, so called from their resemblance to sheep at rest.

ROCHESTER, *rŏch'ĕs-ter:* city, cap. of Olmsted co., Minn.; on both sides of the s. fork of the Zumbro river, and on the Chicago and Northwestern railroads; 50 m. w. of the Mississippi river, 90 m. s.e. of St. Paul. The city is bisected by the river, which affords valuable water-power; is the centre of a rich grain region; has an imposing co. court-house, public library, high school, several grammar schools, and churches; does a large trade in butter, cheese, eggs, and grain; and manufactures flour, machinery, ironware, pumps, and wagons. There are also large grain elevators and stockyards. Pop. (1900) 6,843; (1910) 7,844.

ROCHESTER: city, Strafford co., N. H.; on the Boston and Maine, and the Portsmouth Great Falls and Conway r.rs.; the terminus of the Nashua and Rochester, and the Portland and Rochester r.rs.; near the Cocheco river, at Salmon Falls, 10 m. n.w. of Dover and 78 m. n. of Boston. It is a busy industrial centre with shoe factories which have 1,000 employees; woolen mills 400 employees, brick works, box factories, and other establishments having fully 500 employees. It also has a busy agricultural trade. The principal public buildings are the Gaffney Home for the Aged, churches, high, public, and parish schools, private commercial schools, a public library, and the banks. Pop. (1910) 8,868.

ROCHESTER.

ROCH'ESTER: city, cap. of Monroe co., N. Y.; on both sides of the Genesee river, and on the Buffalo Rochester and Pittsburgh, the Erie, the New York Central and Hudson River, the Rochester and Lake Ontario, the Rome Watertown and Ogdensburg, the Rochester and Glen Haven, the Western New York and Pennsylvania, and the West Shore railroads; 7 m. s. of Lake Ontario, 76 m. e. of Suspension Bridge, 81 m. w. by n. of Syracuse, 229 m. w. of Albany; 17½ sq. m.; popularly known as the 'Flour City.' The city is 263 ft. above Lake Ontario; and the Genesee river, which bisects it nearly equally, has three remarkable falls in the city limits and within a flow of 2 m., the Upper of 96 ft., the Middle of 25 ft., and the Lower of 84 ft. The river and falls furnish motive power of great magnitude, and constitute the chief element of the city's industrial growth and general prosperity. The river is here crossed by the Erie canal on an imposing stone aqueduct 848 ft. long, supported by 7 arches. R. is naturally picturesque and is laid out quite regularly. The streets in the main are broad and lighted with gas and electricity. In the business portion the buildings are large and of striking architectural appearance, and in the residence portion they are set back from the streets and have attractive surroundings of parterre and lawn. The city is supplied with water from two sources, the combined works costing about $3,750,000. The system for fire hydrants and light mechanical purposes is provided by the Holly plan, which takes water from the river and distributes it through 12 m. of mains. The system for general purposes comprises an intake at Hemlock Lake, 29 m. s. and 400 ft. above the city, and a distribution through 150 m. of mains. The main receiving reservoir has a capacity of 85,000,000 gallons, and the distributing reservoir 45,000,000. Both systems can be quickly connected in case an extraordinary amount of water should be wanted suddenly. The city is divided into 16 wards, and the net public debt is about $8,889,000, assessed valuation of all taxable property $115,924,265, and tax rate $1.73 on 100.

Public Buildings.—There are four well equipped hospitals—the City, Saint Mary's, the Homœopathic, and the Hahnemann—besides a municipal hospital for contagious diseases and the insane asylum, or State Hospital. Of legitimate theatres there are four, the Lyceum and the Cook on the east side of the river, the National and the Baker on the west. Of the social clubs the principal are the Genesee Valley, the Rochester, the Eureka, the Rochester Whist, and the Columbia Rifle; of literary clubs the leading ones are the Pundit, the Fortnightly, and the Wednesday Morning.

Manufactures.—Rochester was built up by the milling industry; the quality and amount of wheat grown in the

valley during the early days made a demand for flouring-mills, which was strengthened by the presence of the high falls, so that those structures sprang up rapidly on both banks of the river and became so numerous that the place was long known as 'the flour city' and its pre-eminence in this respect was recognized throughout the country. The development of the enormous wheat-fields of the West caused a decline in this business, so that its relative position was taken by the nursery industry; this was started here in 1838, after which it increased so that in 1906 there were more than 30 firms engaged in the business; besides the nurseries there are several large seed-houses, Rochester being the foremost city in the world in this regard. Rochester is the home of the camera, and practically all of the film cameras that are made in the world are manufactured here, as well as the great majority of plate cameras; in other photographic apparatus, in optical instruments, and in fruit canning it also leads all other places on the globe. Although Rochester is only the 24th city in the United States in point of population, it is the first in many things; it ranks third as to clothing, with an annual output of $10,000,000, and fourth as to boots and shoes, with a production of $7,000,000; its total manufacture exceeds $70,000,000 annually, with over $50,000,000 invested in that and the wholesale trades. The receipts at the postoffice for 1903 were $619,785.95; 640,000 tons of bituminous coal and over 360,000 tons of anthracite are consumed and shipped from here annually.

Banking and Commerce.—In the promotion of trade and in the inducement of outside manufacturers to locate in Rochester an important factor is the Chamber of Commerce, organized in June 1888, which now has a membership of 389. For providing the money necessary to carry on the business above indicated there are eight banks and five trust companies, with a combined capital of $3,025,000, besides four savings banks, the total resources of all these institutions being $103,124,410.73; the amount passing through the clearing house in 1903 was $133,773,705.89.

Education.—The Rochester Athenæum and Mechanics' Institute—generally known by the latter part of its title—was founded in 1885 as a free drawing-school, and has so expanded that it now gives instruction in practical arts and sciences to about 4,000 pupils. The University of Rochester, founded in 1850 and located in beautiful grounds in the eastern part of the city, has a faculty of 23 instructors, with 264 students, and a library of 41,000 volumes. There are also the Rochester Theological Seminary, of the Baptist denomination; Saint Bernard's (Roman Catholic) Theological Seminary, occupying capacious grounds north of the city, and

the Wagner Memorial Lutheran College. The public school system, under the control of a board of education of five members, is among the best in the country; it maintains 34 buildings, with as many principals; the East Side high school was lately completed at a total cost of $322,000. There are also 18 parochial schools and many private ones, including three academies—two of them for girls, one for boys—and one large institution for the instruction of deaf-mutes. The only free public library is the Reynolds, with 52,000 volumes.

Churches and Charities.—There are over 100 churches in Rochester. The first congregation (Presbyterian) was formed in 1815; the Roman Catholic diocese of Rochester was created in 1868. Of the seven cemeteries the oldest is Mount Hope, opened in 1838. There are five orphan asylums, three of which are under Catholic control, one under Jewish. In 1822 the Female Charitable Society was organized, from which have risen the kindred institutions of to-day, including, besides the hospitals and asylums, the Industrial School—not to be confounded with the State Industrial School, a large establishment for the reformation of young criminals—the Home for the Friendless, the Humane Society, the Children's Aid Society, the Society for the Organization of Charity, and a host of other associations for relieving distress.

The first mill at R. was erected by 'Indian' Allan 1789; the Cayuga bridge over the Genesee was completed 1800; a bridge at the falls was finished 1812; and Col. Nathaniel Rochester (q.v.), who bought the Allan mill site 1802, made a permanent settlement there 1818, when the place was named in his honor. In 1823 Brighton was added to the village and in 1834 R. was incorporated as a city. Rochester has always been free from overwhelming calamities. The worst two disasters, financially, in its history, in neither of which was a single life lost, were the great flood of 1865, March 17, when much of the city was under water for two days, doing a million dollars' worth of damage, and the fire of 1904, Feb. 26, which devastated a large portion of the dry goods district and inflicted a loss of $3,000,000. Pop. (1900) 162,608; (1910) 218,149.

ROCH'ESTER: episcopal city, parliamentary and municipal borough, and river-port of Kent, England; between Chatham (q.v.) on the e., and Strood on the n.w., on the right bank of the Medway, 36 m. e.s.e. of London, by the London, Chatham, and Dover railway. The city is surrounded on two sides by the river; and its ancient castle and cathedral, and the numerous martello towers along its shores, render its appearance very striking. The bishopric of R. was founded 604; but the early Saxon cathedral suffered from the ravages of the Danes, and was in a completely ruined condition at the Norman Conquest. Gundulf, consecrated Bishop of R. 1077, began to rebuild the cathedral and the priory connected with it; the dormitory, chapter-house, and refectory were added

under the succeeding bishop; and the new cathedral was dedicated 1130, in presence of the king and a great company of bishops. The cathedral, whose nave and crypt are Norman, and the choir and transepts Early English, is 310 ft. long, and the w. transept is 123 ft., and the nave and choir 68 ft. broad. Of the ancient Norman priory, only a small fragment remains. The castle, crowning an eminence, and overlooking the cathedral, is a Norman keep, of wonderfully strong and solid masonry. R. imports coal and exports hops, and has manufacturing interests and oyster fisheries. R. is introduced by Dickens into *Pickwick*, *Edwin Drood*, and other novels. Pop. 30,650.

R., surmised to have existed prior to the Roman invasion, was called by the Romans *Durobrivæ*, and, according to Bede, derives its present name (*Hrofs-ceaster*, Hrof's Castle) from Hrof, a Saxon chieftain.

ROCHESTER, *rŏch'ĕs-tẽr*, JOHN WILMOT, second Earl of: 1647, Apr. 10—1680, July 26; b. Ditchley, Oxfordshire: writer and courtier who has left a name notorious for wit and profligacy. He was entered of Wadham College, Oxford, when only 12 years of age; and after travelling in France and Italy, attached himself to the court, and rose high in favor with Charles II. In 1665 he went to sea in the fleet commanded by the Earl of Sandwich, and behaved at Bergen with great intrepidity. R. incurred the displeasure of the king and was committed to the Tower, for the forcible abduction of a celebrated beauty and heiress, Miss Mallett, who was rescued by her friends, but whom he subsequently married before he was 20 years old. His wit and love of pleasure made him the favorite of a dissolute court. His genius and activity of mind led him to literary pursuits and poetry; and Anthony Wood speaks of him as the greatest scholar among the nobility of his day. As he passed out of youth, he gave less time to study, and more to vicious company, and indulgence in wine; and he died at the early age of 34. Bp. Burnet has left an interesting account of his death under the title *Some Passages of the Life and Death of John Earl of Rochester*, from which it appears that he sincerely repented his immoral and dissolute courses and became a Christian convert. . He wrote some love-songs, an elegant *Imitation of Horace on Lucilius*, a *Satire against Man*, in which he is much indebted to Boileau, and an *Essay on Nothing*.

ROCH'ESTER, NATHANIEL: 1752, Feb. 21—1831, May 17; b. Westmoreland co., Va. Most of his boyhood was spent in N. C. In the revolution he was paymaster of the N. C. troops; he was a member of the legislature, engaged largely in mercantile operations, and 1783 commenced various manufactures at Hagerstown, Md. He purchased large tracts of land in N. Y., to which state he removed 1810, and 1818 he settled at Rochester, which had been named in his honor. He was influential in securing the formation of Monroe co., of which he was the first clerk and the first representative in the state legislature. He died at Rochester.

ROCH'ESTER, UNIVERSITY OF: college at Rochester, N. Y., under Baptist auspices. In 1847 effort was made to remove Madison Univ. (college, with a theol. dept.), founded 1820, from Hamilton, N. Y., to Rochester. This failing, a charter for the Univ. of Rochester was obtained from the Board of Regents of N. Y. 1850, made effective by provision for buildings and a fund of $100,000. The charter does not vest control in any religious denomination; it created a self-perpetuating board of 24 trustees, who, as fact, represent different denominations, but with a majority of Baptists thus far. There is no preaching service maintained by the institution; no organic connection with the kindred and neighboring theol. seminary; no schools of law, medicine, or applied science; no preparatory dept., and no dormitories. The number of students in the last catalogue included 32 women, and the late Lewis H. Morgan, LL.D., left his estate to the univ. to provide facilities for co-education. The campus, in the e. part of the city, is of 24 acres, and the brown-stone buildings (visible from the N. Y. Central railroad), are Anderson Hall, for chapel and lecture-rooms; Sibley Hall, for library and cabinets; Reynolds Chem. Laboratory; and an observatory and president's house. The museums are superior; the library has 38,000 vols., with a fund of $50,000. The courses of study are indicated in the 1900-01 summary of students: resident graduates, 4; classical students 221; total 210. There are 18 professors; the pres. was Rhush Reed, D.D., LL.D. In 1901 the productive funds had a value of $723,779; the total income was $53,842; the value of grounds and buildings was $430,000. The geological museum is one of the finest in the United States. There are 110 scholarships, besides the special Dean fund of $50,000 for sons of Baptist ministers.

ROCHET, n. *rŏch'ĕt* [F. *rochet*, a smock-frock, a rochet —from mid. L. *roccus*, an under garment: OHG. *hroch*, a frock: It. *rocchetto*, a garment of plaited lawn worn by bishops: Ger. *rock*, a coat]: a portion of the church costume of bishops, abbots, prelates, canons of certain privileged chapters, and some other dignitaries; usually of lawn or lace, and of the form of a surplice, but with close-fitting sleeves. In the Latin Church, its use is very ancient, though its form has varied. In the first Prayer-book of Edward VI., which preserved a considerable part of the Roman episcopal costume, the R. was ordered to be worn by bishops in the communion service. The R., however, must not be confounded, as is often done by writers on clerical costume, with the Dalmatic and Tunic, tight and close-fitting vestments of colored silk, worn by bishops under the *Paneta* (q.v.).

Rochet.

ROCK, n. *rŏk* [F. *roc* or *roche;* It. *rocca;* Sp. *roca,* a rock, a crag: prov. F. *rocque,* a lump of earth: Ir. and Gael. *roc,* a rock]: large mass of stone bedded in the earth's crust, or resting on its surface: kind of solid sweetmeat or candy: *figuratively,* defense; protection; immovability: ADJ. hard like rock; resembling or composed of rocks. ROCKY, a. *rŏk'ĭ,* full of rocks; very hard; stony. ROCK'INESS, n. *nĕs,* state of being rocky. ROCK'-LESS, a. *-lĕs,* without rocks. ROCK'ERY, n. *-ĕr-ĭ,* hillock formed of stones and earth, etc., for plants. ROCK-ALUM, roche-alum (see under ROCHE). ROCK-BOUND, hemmed in or rimmed by rocks. ROCK-BASINS, curious basin-shaped cavities occurring in granites of high and exposed regions, from one to many ft. in diameter. ROCK-BUTTER, mineral substance, soft yellowish admixture of Alum (q.v.), alumina, and oxide of iron, oozing out of rocks containing alum—product of decomposition; it is always greasy to the touch, yet often hard enough to show a straight foliated fracture. ROCK-CORK, variety of asbestos whose fine fibers are so interlaced and matted as to give it the texture and lightness of cork. ROCK-CRYSTAL (see below). ROCK-LEATHER, same as ROCK-CORK, which see. ROCK-MEAL, n., in *mineral.,* white cotton-like variety of carbonate of lime occurring as an efflorescence, falling into a powder when touched. ROCK-OIL, familiar as well as commercial term for *petroleum* or *mineral oil* (see NAPHTHA: PETROLEUM). ROCK-PIGEON, the wild pigeon, building its nest in rocky hollows—original of the domestic pigeon. ROCK-ROSE, foreign wild trailing plant having limp yellow petals; the *Hĕlĭanth'ĕmŭm vulgārĕ,* ord. *Cistācĕæ* (see CISTUS), and American plants of the same order. ROCK-RUBY, the red garnet, having a cast of blue. ROCK-SALT, familiar as well as scientific term for common salt, when it occurs in the earth's crust as a solid rock-mass (see below). ROCK-SOAP (see below). ROCK-SHELLS, certain univalves of the genus *Murex.* ROCK-WOOD, variety of asbestos, of brown color, occurring in long compacted fibers, which give it the aspect and texture of wood. ROCK-WORK, in *gardening,* rough blocks of stone and earth built up in imitation of the asperities of rocks, among which plants adapted for the situation may grow; a rockery, which, simple as it seems, is very difficult of construction in a tasteful manner.

ROCK.—In the ordinary use of the word, rocks are fragments of the hard materials which make up the crust of the earth, of natural origin, and in size larger than the closed fist. It is evident that the definition, which in common language implies in a vague way, merely hardness, natural origin, and size, should be incapable of exact statement. The word stone is used indiscriminately for the first two qualities, but is inapplicable to the largest masses which might be called rocks, while it is applicable to smaller objects than this last term would cover. In descending order of size, but with equally arbitrary limits, are the words pebble and sand.

ROCK.

In a geological sense a rock is a mass of matter distinctive enough to be considered a constituent part of the earth we inhabit, and regardless of its physical state, whether solid, liquid, or gas. From this point of view the atmosphere is a rock, though it is rarely called so, but water, which constitutes two-thirds of the portion of the earth which we know, is one of the most important of all rocks.

According to La Place's Nebular Hypothesis, the space of which we know anything was entirely filled by something more tenuous than any matter of which we have cognizance,—perhaps the ether,—which through the force of attraction was condensed and set into rotary motion. In the course of this condensation the stage of *matter* was reached and an inconceivable high temperature was attained. This heated matter finally reached the state of a liquid, which, by reason of the motion of rotation of the entire mass, collected in the plane of the equator of the motion and ultimately segregated into a ring or rings, which in turn broke up into separate fragments, each having its orbital and rotary motion. Some modern improvers of La Place's theory have suggested that these fragments of the nebular or liquid ring were completely solidified by cold, but after, by union with each other, formed larger masses and developed sufficient heat to produce again partial or entire liquefaction. Whether or not this were true, the fact remains that the solid inorganic rocks of the earth were either congealed from the molten mineral matter once constituting our planet while it was in a state of fluidity, or they are products derived from these by various means to be alluded to.

Hardly less important than the hypothesis of La Place, is the beautiful generalization of Sir William Crooke as to the genesis of the atoms. Assuming, with the former, the existence of an ultra-material substance, to which he gives the name of protyle (*prota hyle*, the first substance, *Urstoff* of the Germans), at an enormously high temperature to be gradually cooling by radiation, and at the same time to be alternating from plus to minus in electrical phase from reasons unknown to us, he accounts for the successive production of ever denser aggregations of protyle and the separation at intervals of atoms of increasing weight, each of which is the indivisible part of a new element. The steadily continued oscillation from positive to negative and back again, while these separations were taking place, would explain the periods and groups of elements pointed out by Mendelejeff and Mayer. But whether or not this conception be finally promoted from hypothesis to theory, it may be assumed without hesitation that the elements existed in the molten mass which was the primal condition of our earth. It follows that combinations between these elements compatible with the temperature must have existed before

any general segregation of the definite compounds which we call minerals.

In a molten mass of this kind—the *magna* of our earth—the heavier parts would sink at the bottom, as is the case in a lead or iron furnace, and the lighter scoriaceous materials would be found on the surface. It is confirmatory of the accuracy of this supposition, that in order to explain the mass of this planet as deduced by astronomers from observation, it is necessary to assume the interior of our globe to be of much higher density than the surface. This surface is in the main composed of the materials which form slag in the metallurgical processes above mentioned; which is only another way of saying that these materials are largely silicates or combinations of silicic oxide with the alkalies, alkaline earth and earth metals (i.e., potassium, sodium, etc.; calcium, magnesium, aluminum, etc). Next to oxygen, which constitutes half of all that part of the earth accessible to us, comes silicon (23.3 p.c.), aluminum (7 p.c.), iron (5 p.c.), calcium (3.3 p.c.), magnesium (2.5 p.c.), sodium (2.25 p.c.), potassium (2.23 p.c.), hydrogen (0.94 p.c.). These nine elements compose, according to Prof. F. W. Clarke, nearly 97 p.c. of the crust of the earth. There are ten other elements (titanium, carbon, chlorine, bromine, phosphorus, manganese, sulphur, barium, nitrogen, and chromium) which this author considers common enough to be reckoned among the nineteen substances found in the terrestrial envelope; but these last ten, taken all together, only amount to 0.92 p.c., or 0.02 p.c. less than the hydrogen alone. The amount of chromium, for instance, is rated as only 0.01 p.c., which is the lowest weight limit of the substances taken into consideration.

In conformity with chemical laws, certain compounds separate from a gradually cooling molten mass containing the above and many other substances. These compounds have definite and uniform chemical constitutions and physical characteristics, and are called minerals. As such they will be treated in another place, but when the mass of such separated matter is great enough, they fulfil the definition of a geological constituent of the earth and as such must be treated as rocks.

The basis of all inorganic rocks is the cooled earth slag, of which the probable genesis has just been given. T. Sterry Hunt and others have shown that while this solidified slag was still incandescent the volatile materials must have charged the atmosphere, and sulphur, chlorine, and doubtless nitrogen must have formed acid vapors which ultimately descended, as the cooling proceeded on the easily soluble surface, disintegrating, rifting, corrugating, and carrying off, in solution or suspension, materials which were either precipitated in the permanent sea basins, or strewn along the courses of the currents in a fragmentary condition, and deposited by subsidence in the deep water as silt or ooze. As a result of the deformations of this character, and of the contraction of

the earth by cooling, portions of the hard crust were elevated and other parts depressed beneath the waters of the primeval sea, and, as a consequence of this, the two forces of air and water commenced the change of the hard crust into other forms. Æolian rocks are produced by atmospheric forces which pulverize exposed rocks by abrasion, split them by heat, cold, frost, and rain, and distribute the débris as detritus at the basis of cliffs; strew them as loess, sand, and dust, extending many miles, and in at least one locality in China reaching a depth of a thousand feet, and dunes, fashioned by the wind, from the sand, usually, of sea beaches, etc. Also the atmosphere must be credited with the disintegration of rocks by streams and rivers fed by the rains, although the alluvial deposits and terraces are considered under the next head, i.e., aqueous formations.

With equal justice should glacial phenomena be ascribed to the atmosphere, though they are not results of the mechanical forces of the air itself, as is usually meant by the term æolian.

Glacial action is due to the formation of sheets of ice through secular changes of temperature, resulting in ice masses of continental dimensions, or to constant but smaller, annually reinforced, ice sheets deposited in the ravines and upper valleys of high mountain ranges. In both cases motion is imparted to the glacier by the pressure of continued regelation in its upper part, and the less resistance of its lower part. This motion grinds up the rocks forming its bed, and produces drift or boulder clay, and piles up fragments, on its sides and at its termination, called moraines. Water courses from the melting ice are formed beneath such sheets, and these streams leave deposits called eskers, or irregular mounds at their mouths, called kames.

Aqueous rocks result from the disintegration or solution of older rocks and the distribution by water of the materials thus collected. They constitute the larger part of the earth's solid surface, and are called sedimentary because the materials composing them were deposited from water, as a sediment or precipitate, after having been transported by waves, currents or streams from their places of origin; and clastic, because they are usually more cleavable or separable along the planes of their bedding. Under this heading are included also materials such as rock salt, gypsum, sodium nitrates, and some limestones, deposited from their solutions.

Metamorphic is applied to those rocks which after deposition have been changed by some agency into a mass of a different kind, though in common usage this term is restricted to the change by heat and pressure. This class is one of transition, its various members approximating the purely sedimentary rocks like sandstones and marls, on the one side, and on the other, the quartzites, mica-schists, gneisses, and even granites. Its rocks are distinguished by a crystalline character either visible to the

naked eye or through the microscope, and, as a general rule, also by greater hardness when not in process of decomposition. In them the plane of cleavage, or that of least resistance to separation, which in purely sedimentary rocks is that of bedding, may be the cleavage plane of some mineral constituent, when these constituents crystallize symmetrically in the altered material.

As examples of metamorphisms may be mentioned sedimentary matter to gneiss; clay slate to mica-schist, limestone to marble or calcite, peridotites to serpentine, bituminous coals to anthracite.

Igneous rocks are those which have been produced from a molten state. Some igneous rocks may be portions of the original solidified nucleus of our planet, but if so they have not been certainly recognized. The igneous rocks we know are, I, Plutonic (congealed masses of deep-lying sediments remelted under great pressure and slowly cooled); II, Volcanic or Extrusive masses, which have been cooled more rapidly under less pressure, and nearer to the surface. The classification of igneous rocks is based on their chemical composition, their mineral content, their texture, their percentage of silica, etc.

Some of the larger divisions are: I. Plutonic: Acid, Granites (Syenitic, Hornblendic, etc.); Extrusive, Rhyolites; Trachytes, etc. II. Basic. (Si-50 to 65 p.c.) Plutonic; Diabases usually dikes, Diorites, Gabbro. Extrusive: Andesites (containing quartz Dacites), etc. The diorites with biotite and augite are Kersamtites. The very basic are Peridotites, etc.

ROCK, n. *rŏk* [Icel. *rokkr;* Sw. *rock;* Dan. *rok;* OHG. *roccho;* It. *rocca,* a distaff]: the staff or frame about which flax or wool is arranged, and from which the thread is drawn in spinning.

ROCK, v. *rŏk* [Dan. *rokke;* Norw. *rugga,* to rock; to shake: OF. *rocquer,* to rock, as a child: Ger. *ruck,* a shake or toss]: to move backward and forward, as in a cradle, a chair, etc.; hence, to lull; to quiet; to be moved backward and forward. ROCK'AWAY, n. a four-wheeled two-seated carriage, with full standing top. ROCK'ING, imp.: N. action of one who rocks; state of being rocked. ROCKED, pp. *rŏkt.* ROCK'ER, n. *-ẽr,* he who or that which rocks; the curved support of a cradle, etc. ROCKING-CHAIR, a chair mounted on rockers, so as to be easily moved backward and forward. ROCKING-HORSE, a wooden horse mounted on a frame, on which children may play at riding.

ROCK, n. *rŏk:* a huge bird. See ROC.

ROCK: kind of sweetmeat, made of sugar, sometimes mixed with almonds and various flavoring materials. The sugar is first boiled, and then poured out upon a cold marble slab, and worked up into a rough, hard mass.—The term is applied also to a form of sweetmeat, in which the sugar, while hot and soft, is pulled repeatedly

over a smooth iron hook, until it becomes white and porous. This also is flavored with essences.

ROCK, Cock of the (*Rupicola aurantia*): bird of order *Insessores;* tribe *Dentirostres;* family *Pipridæ* (Manakins, etc.); regarded by many as a sub-family of *Ampelidæ.* The *Pipridæ,* or Manakins, are a large group of birds, many of them of very curious and beautiful plumage, most of them inhabitants of tropical America. They have the bill broad at the base, the nostrils at the side nearly hidden by feathers; the wings rather short, but pointed; the tail very short and even; the legs (*tarsi*) long and slender. In the genus *Rupicola,* the bill is strong; and the species sometimes called *Rock-manakins* are comparatively large birds, having a double vertical crest on the head, with the feathers disposed fan-like. The Cock of the Rock is a native of Guiana and other n.e. parts of S. America. It is remarkable for its bright orange-colored plumage—the quill-feathers of the wings, however, being black, and the tail tipped with yellow—its large crest overhanging the bill. Its habits are wary. It is a solitary bird, inhabiting rocky places, retiring into a hiding-place during the day, and coming forth to feed at sunrise and sunset. The tips of the crest-feathers are tinged with brown and yellow. The wing-coverts and upper tail-coverts are loose flowing plumes, giving a resemblance to gallinaceous birds. The size is about that of a common pigeon.—The Peruvian Cock of the Rock (*R. Peruviana*) is less brilliant in plumage than the Guiana species.

ROCK FALLS: Ill., city in Whiteside co.: on Rock River and on the Chicago, Burlington & Quincy railroad; across the river from Sterling, where connection is made with the Chicago & Northwestern railroad; about 110 miles west of Chicago. It was settled in 1867 by Augustus P. Smith. It is the commercial and industrial center of the eastern part of the county south of Rock River. The water power is good; the chief manufactures are wire fencing, rivets, agricultural implements, butter tubs, flour, furniture, wooden-ware, wagons, carriages, and dairy products. The number of employees is about 1,000. There are seven churches, a high school, elementary schools, and a public library. The government is vested in a mayor and a council of six members, who serve two years; three members are elected annually. Pop. 2,500.

ROCK-FISH: the name of several fishes usually found about reefs and on rocky bottom. In the United States the most prominent one is the striped and rock bass (see Bass); another is a grouper (*Epinephelus adscensionis*) of the West Indies, called by English-speaking fishermen 'rock-hind.' The name applies on the Pacific coast to the whole family *Scorpænidæ,* represented in the Atlantic by the dory or rose-fish (*Sebastes marinus*), which looks somewhat like a perch in form, reaches a length of two feet, has a rosy hue, and is excellent for the table; it

may be known by its nearly uniform orange-red color, and its spiny head. The genus *Sebastodes* contains more than 50 species of Pacific coast rock-fish, and several are constantly brought to market. Says Jordan: '*Sebastodes pauci spinus,* the boccaccio, large and swift, is abundant in California. *Sebastodes flavidus,* the yellow-tail rock-fish, reaching a length of two feet, is one of the most valuable species. It is abundant from San Francisco to San Diego. *S. mystinus,* the black rock-fish, is the most abundant species in rather shallow water about San Francisco. Another abundant species is the orange rock-fish, *S. pinniger,* found from Puget Sound to San Diego. It reaches two feet in length, and is a common market fish; and the rasher (*S. miniatus*) is another important species, reaching a length of two feet, and abundant from San Francisco to San Diego. The red rock-fish (*S. ruberrimus*) is the largest species of all, reaching a length of 2½ feet; it is abundant from San Diego to Puget Sound, and is a valued food fish. Another important species is the yellow-backed rock-fish (*S. maliger*), which is found from Monterey to Sitka. It is especially abundant northward, and reaches nearly two feet in length. The Spanish flag, *Sebastodes rubrovinctus,* banded red and white, is perhaps the handsomest sea fish in our waters.

ROCK: a river rising in s.e. Wis., and running s.w. into Ill., thence still s.w. to the Mississippi 3 m. below Rock Island. Its course of 200 m. is through a pleasant region, one of the most fertile in the world—the 'Rock River Country.' Its frequent falls give abundant water-power, and it is crossed by several railroads.

ROCKALL, *rŏk'awl:* islet rock on a sandbank in the north Atlantic Ocean; this bank is nearly 100 m. in length, and 40 in breadth. The rock itself is in 57° 35′ n. lat., 13° 40′ w. long., about 300 m. w. of N. Uist, in the Outer Hebrides, and is of rounded form, rising 18 or 20 ft. above the sea. It is surrounded by breakers, and inhabited only by large flocks of sea-birds. It was found some years ago to be surrounded by considerable shoals of large fish, chiefly *Gadidæ* and *Pluronectidæ.* A company was formed 1861 to carry on a fishery at the place; but the supply was less than was anticipated, and the distance from markets too great, and the speculation proved very unprofitable.

ROCK CRYS'TAL: popular, partly also scientific, name for the finest and purest Quartz (q.v.), seldom applied, however, to small implanted crystals which are mere six-sided pyramids, but generally to those in which the six-sided prism is well developed. The name is sometimes limited to colorless and perfectly transparent quartz, but is also rarely extended to the violet or amethystine (*Amethyst,* q.v.), red (*Bohemian Ruby* or *Silesian Ruby*), wine-yellow (*Citrin* or *Gold Topaz*), brown or smoky (*Smoke Quartz, Cairngorm Stone*), etc. The beauty of

specimens of rock crystal is sometimes very great. The crystals are sometimes slender, crossing and penetrating each other in exquisite groups. They sometimes inclose other substances which are beautifully seen through the transparent rock crystal, as slender hair-like or needle-like crystals of hornblende, asbestos, oxide of iron, rutile or oxide of titanium, oxide of manganese, etc., and such specimens are known by various fanciful names, as *Thetis's Hair-stone, Venus's Hair-stone, Venus's Pencils, Cupid's Net, Cupid's Arrows,* etc.; and sometimes the inclosed substances are small spangles of iron-glance, or crystals of iron pyrites, or native silver in fern-like leaves, or spangles of gold. Rock crystal in loose complete crystals, as limpid as water, abound in cavities of the calciferous sandrock in the region of the Mohawk River, varying in size from minuteness to several inches in diameter. Rock crystal was prized by the ancients, and was used by them, as it still is, for vases, cups, seals, etc. Large spheres of pure and flawless rock crystal are worked out and polished by the Japanese. An important modern use of it is for lenses of spectacles, etc. ('pebble lenses'), its hardness rendering it much less liable to be scratched than glass.

ROCKEFELLER, John Davison: 1839, July 8; b. Richford, N. Y.: financier. In 1853 the family removed to Cleveland, O., where Rockefeller graduated at the high school at 16 years of age. While not yet 19 years of age he became partner in the firm of Clark & Rockefeller, and in 1865 in the oil-refining firm of Rockefeller & Andrews. In 1870, the Standard Oil Co. of Ohio was organized, capital $1,000,000; John D. Rockefeller, president. In 1882, the Standard Oil Trust was formed with capital $75,000,000, afterward increased to $95,000,000. In 1892 the Supreme Court decided the trust to be illegal; it was accordingly dissolved, and the business conducted by the separate firms or companies, in each of which John D. Rockefeller is a shareholder. Mr. Rockefeller's benefactions have been large and numerous, the chief beneficiaries being the General Education Board, Chicago University, Rush Medical College, and Rockefeller Institute for Medical Research. It is estimated that up to 1909 he had given away about $70,000,000.

ROCKET, n. *rŏk'ĕt* [F. *roquette*—from It. *ruchetta,* the rocket; *ruca,* garden-rocket—from L. *erūca,* a kind of cole-wort: Ger. *rauke,* the rocket]: name given to a number of plants of nat. order *Cruciferæ,* and belonging to the genera *Brassica, Sisymbrium, Erysimum, Barbarea, Hesperis,* etc.—Garden Rocket (*Brassica, Eruca,* or *Eruca sativa*) is an annual, native of Austria, with stem 2 ft. high, upright and branching, leaves smooth, succulent, cut and toothed. When in flower, it has a strong, peculiar, and disagreeable smell; but when it is very young, this smell is almost imperceptible, and the leaves are used as a salad, for which it is frequently sown on

the continent of Europe.—The name GARDEN ROCKET is given also to *Hesperis matronalis,* called also Dame's Violet (q.v.), a favorite ornament of flower-borders.—The YELLOW ROCKET of flower-borders is a double-flowered variety of *Barbarea vulgaris* (see CRESS).—The WILD ROCKET (*Sisymbrium officinale,* or *Erysimum officinale*) is sometimes sown and used as a spring pot-herb.

ROCKET, n. *rŏk'ĕt* [It. *rocca,* a rock or distaff; *rocchetto,* a rocket or bobbin to wind silk on; any kind of rocket or squib of wildfire: Ger. *rakete,* a rocket]: firework consisting of a cylindrical case of pasteboard filled with a composition, whose combustion produces recoil so great as to cause it to ascend into the air, its flight being guided by a rod attached. Rocket is also a weapon of war invented by Sir William Congreve; consisting of a tubular case of pasteboard, or thin metal, charged to the muzzle with a composition, consisting of saltpetre 68 parts, sulphur 12 parts, charcoal, or mealed powder, 32 parts. This composition is rammed hard into the case, the center being left void. To the rocket is attached a long stick, which serves (like the tail of a kite) to straighten its course. See PYROTECHNY. When lighted at the end, the stream of gases propels the mass on the principle explained under BARKER'S MILL. As a mere firework, rockets are made of a few ounces in weight: as intended to throw light upon a town or hostile work, they average from ½ lb. to 2 lbs. These light-rockets were improved by Sir William Congreve (1772-1828; b. Staffordshire; lieut. gen. in the Brit. army), who so contrived them, that, when over the necessary point, the rocket discharged a number of light balls which burned in the air for several minutes with great brilliancy, while others at the same point release small parachutes which sustained a bright light for a still longer time. But Sir William Congreve did more: he converted the rocket into a terrible weapon of war, with ranges which no ordnance of that day could attain. Discarding the small sizes, he made 12-lb., 18-lb., and 32-lb. rockets, which he charged with canister shots, bullets, and other missiles. The stick for a 32-lb. rocket is 18 ft. in length, and the maximum range 3,500 yards. This range can be increased by discharging the rocket from a cannon, with a time-fuse to ignite it at the cannon's utmost range, when the rocket commences its own course. As missiles, these rockets are found to annoy most seriously the defenders in a fortified work; and, in a bombardment, they speedily set houses and buildings on fire. One great advantage in a rocket is, that it has no recoil against the stand from which it is fired; the largest rocket may therefore be discharged without danger from the smallest boat.

ROCK ETER, n.: a term applied to a bird, as a pheasant, which, when flushed, rises rapidly straight up in the air.

ROCK'-FISH. See WRASSE.

ROCKFORD, *rŏk'fȯrd*, Ill.: city, county-seat of Winnebago co.: on the Rock River, and on the Chicago & N.W., the Chicago, M. & St. P., Chicago, B. & Q., and the Illinois Central R.R.'s; 81 miles northwest of Chicago. It was settled in 1834, being the first settlement in the county; and was incorporated as a city in 1853. In 1890 it obtained a considerable increase of territory by annexation. It is built on both sides of the river, which is here crossed by three railroad and three highway bridges. A dam 800 feet long across the river secures excellent water power for manufacturing, and the city is one of the most important industrial centers of northern Illinois. The chief manufactures are agricultural implements and furniture; others are pumps, watches, silver-plated ware, knitting wool, paper, flour, and grape sugar. According to the census of 1900 the manufacturing establishments numbered 450, with a capital of $14,126,834; the number of employees is about 13,000.. There are six banks with a combined capital of $650,000. Rockford is surrounded by a fertile agricultural region and, with its railroad facilities, is an important shipping point for the products of this district. The city is well built with wide, regular streets; among its notable public buildings are the Memorial Hall for Soldiers, the city-hall, the court-house, two hospitals, and the public library; the library contains over 20,000 volumes. The public school system is of the best, and includes a high school, organized in 1857; there is also a Roman Catholic parish school; and the city is the seat of Rockford College (for women) and of Brown's Rockford Business College. The government is vested in a mayor and a council of 15, elected biennially; the council has the power of appointing the city officers. There is an excellent water supply from five artesian wells, and the waterworks are owned and operated by the municipality. Pop. (1900) 31,051; (1910) 45,401.

ROCKFORD COLLEGE: a college for women, located at Rockford, Ill. It was founded in 1849 as a seminary, and received its college charter in 1892. It has a collegiate department, department of music, and preparatory department; the collegiate work is in two courses, classical and general scientific, for the completion of which the degrees A.B. and B.S. are conferred. The students number about 100.

ROCKHAMPTON, *rŏk-hămp'tȯn*, Australia: capital of the county of Livingstone, Queensland, on the Fitzroy River, about 420 m. by rail n.w. of Brisbane, almost on the Tropic of Capricorn. It is enclosed by hills, and is the gateway to rich pasture lands and the adjacent Mount Morgan mineral fields. It has considerable river traffic with the ports of Alma and Broadmount at the mouth of the river, 35 m. distant. Pop. (1901) 15,461.

ROCKHILL, S. C.: town in York co.: on the Southern and the South Carolina & G. E. R.R.'s, about 25 m. s.s.w. of Charlotte, N. C. It is in a fertile agricultural region

in which cotton is one of the principal products. The principal industries are connected with cotton and farm products and lumber. It is the commercial and industrial center of a large part of York county.

ROCKHILL, William Woodville: traveler, diplomat, and author: b. Philadelphia, Pa., 1854, Apr. 1. He received his early education in France at the Lycée Bonaparte and the College de France, Paris. In 1871 he graduated from the military school at St. Cyr, and for some time served in Algeria in a French regiment. He returned to the U. S. in 1876, but in 1881 went back to France to continue his oriental studies; and in 1884 was appointed to the U. S. diplomatic service as 2nd secretary of the legation in Peking, China, the following year being appointed sec., and in 1886 chargé d'affaires in Korea. Between 1888-92 he made two journeys of exploration in China, Mongolia, and Tibet. Returning to the U. S., he became chief clerk of the state department in 1893; 3rd asst. sec. of state in 1894; and 1st asst. sec. of state in 1896. He was minister to Greece, Roumania, and Servia in 1897-99, resigning in the latter year to become director of the Bureau of American Republics. He was appointed commissioner to China in 1900, and after the Boxer troubles plenipotentiary to the Congress of Peking (Feb.-Sept., 1901), later resuming his duties as director of the Bureau of American Republics. In 1905 he was appointed minister to China. Among his published works are: *Udanavarga, the Northern Buddhist* (1883); *The Life of the Buddha and the Early History of His Order* (1884); *The Land of the Lamas* (1891); *Explorations in Mongolia and Tibet* (1893); *Diary of a Journey Through Mongolia and Tibet in 1891 and 1892* (1894); *Notes on the Ethnology of Tibet* (1905), etc.

ROCKINGHAM, *rŏk'ĭng-am*, Charles Watson-Wentworth, Marquis of: English statesman: b. 1730, May 13; d. 1782, July 1. He was educated at Westminster School and Saint John's College, Cambridge, and in 1750 was created an Irish peer. He took his seat in the House of Lords in the following year. He took little part in politics until 1765, when on the refusal of Pitt to take office, he became prime minister. He took a friendly attitude toward the American colonies and favored the repeal of the Stamp Act, though he affirmed the right of Parliament to tax the colonies. He gave offense to the king for his support of the repeal principle and for refusal of allowances to the king's brothers, and was superseded by Pitt, who returned to form a new ministry. In March, 1782, upon the fall of North's administration, he was called upon to form a coalition ministry, in which he held the treasury. The chief events of his second term were the concession of legislative independence to Ireland, and the forcing the king to treat for peace with the United States.

ROCKING-STONES.

ROCKING-STONES, or LOGGANS, *lŏg'ganz:* large masses of rock so finely poised as to move forward and backward with the slightest impulse. They occur in nearly every country. In N. America they are for the most part obviously but bowlders left by glaciers of the Glacial Period, or, in some cases, a mass of fallen or of denuded rock. Some seem to have been formed by cutting away a mass of rock round the centre-point of its base, The former are chiefly granitic rocks, in which felspar and porphyry are abundant; and these ingredients becoming rapidly decomposed, and the dust and sand washed away by rains, what was formerly a solid rock assumes the appearance of a group of irregularly-shaped pillars, having a rhomboidal horizontal section, and separated into portions by horizontal and vertical fissures. As decay proceeds, the edges of the blocks forming the pillar are first attacked and disappear, as is also the case with greenstone and basalt, and the pillar now becomes a pile of two or more spheroidal rocks, resting one upon the other (see fig., where A, B, and C exhibit three successive stages in the process of decomposition, as observed by De Luc in the mountains of Silesia). Should a mass of rock be so situated as to preserve its equilibrium in spite of the gradual diminution of its base or point of support, a rocking-stone or loggan is the result. For an exposition of the principle regulating the stability of equilibrium of R.-S. see STABILITY. Various explanations have been given of the uses of these singular objects. They are supposed to have been used in very early times for purposes of divination, the number of vibrations determining the oracle; hence it came to be believed that sanctity was acquired by walking round them.

Rocking-stone.

Some R. S. occur near to remains of ancient fortifications, which seems to corroborate a statement in one of the poems of Ossian, that the bards walked round the stone singing, and made it move as an oracle of the fate of battle. In Greece, rocking-stones occur as funeral monuments, and are generally found on conspicuous places near the sea. One near Land's End, Cornwall, England, has been computed to weigh no less than 90 tons.

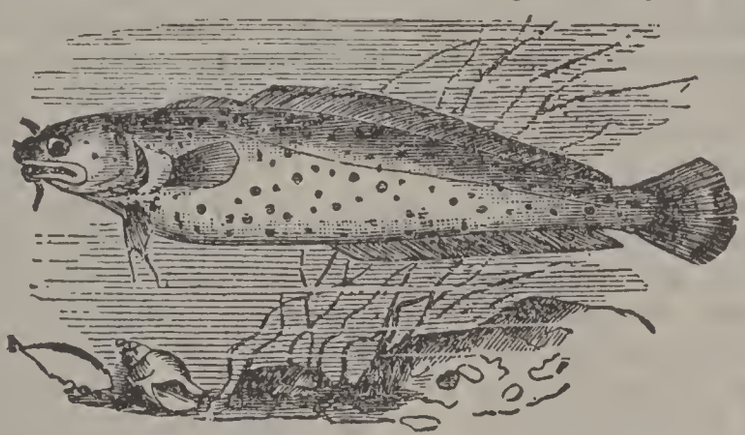
ROCK ISL'AND: city, cap. of Rock Island co., Ill.; on the Mississippi river at the foot of the upper rapids, and on the Chicago Rock Island and Pacific, the Rock Island and Peoria, the Chicago Milwaukee and St. Paul, and the Chicago Burlington and Quincy railroads; opposite Davenport, Ia., 180 m. w. of Chicago. It is beautifully built on a sloping plain that makes a picturesque break in the Ill. bluffs of the river; is lighted with electricity; has 5 miles of street railroad; and is supplied with water from the river by the Holly system, which distributes through 17 m. of mains in the city. The city is connected with the island and thence with Davenport by a wrought-iron railroad and highway bridge built by the U. S. govt. at a cost of $1,300,000. Another bridge connects Moline with the island, thus making 'The Triplets' one in many matters commercial and industrial. The navigable part of the river is on the w. of the island; the e. channel was closed by a stone dam built by the U. S. govt., which gave the city and the island an immense water-power that is utilized in both places. This dam was washed away 1888, and has since been replaced by a stronger one. R. I. is named from the beautiful island in the river, which is 3 m. long, comprises 960 acres, was the site of Fort Armstrong in the Black Hawk (q.v.) war and a prison for captured Confederates in the civil war, and is now one of the most important U. S. milit. reservations in the country, containing the central armory and arsenal, built at a cost of $10,000,000. The various manufacturing establishments produce plows, stoves, lumber, beer, oil cloth, soap, etc. R. I. is the seat of the Augustana College and Theol. Seminary of the Swedish Evang. ch., and of other schools and libraries, of St. Anthony's Hospital, and has many fine church and business buildings. Pop. (1910) 24,335.

ROCKLAND, *rŏk'land:* city, cap. of Knox co., Me.; on Penobscot Bay and the Knox and Lincoln railroad; 10 m. n.w. of the Atlantic Ocean, 40 m. e.s.e. of Augusta, 49 m. e.n.e. of Bath. It has a water-front of 4½ m.; an excellent harbor protected by a granite breakwater; fire, water, gas, and electric light services; churches, schools, public library; federal building (erected 1874–5 at a cost of $175,000); co. court-house (cost $80,000); manufactures of machinery and stone-working tools, granite-quarrying, ship-building and other industrial interests. Its principal exports are lime (about 1,000,000 casks annually), and granite. The custom-house at St. Louis, and the postoffices at New York and Cincinnati were built with granite from the R. quarries. Boston and Bangor steamboats stop at R. The city incorporated 1848 and chartered 1854. Pop. (1910) 8,174.

ROCK'LAND: town in Plymouth co., Mass.; on the Old Colony railroad; 19 m. s.e. of Boston. It is noted for the manufacture of boots, shoes, and tacks; and also has box-board works, shoe-box works. Pop. (1910) 6,928.

ROCK'LAND LAKE: beautiful sheet of water in Rockland co., N. Y., 30 m. n. of New York, 1 m. from the Hudson, 160 ft. above sea-level. It is notable as furnishing enormous quantities of pure ice for supply of New York, and for export.

ROCK'LING (*Motella*): genus of fishes of the Cod and Haddock family (*Gadidæ*), having an elongated body, compressed toward the tail; the first dorsal fin very slightly elevated, and very delicate; the second dorsal and the anal fins long, continued almost to the tail fin. The species vary much in size. None are much regarded by fishermen;



Three-bearded Rockling or Sea Loach (*Motella tricirrata*).

one reason being that decomposition takes place very rapidly after they are taken out of the water, though, when quite fresh, they are good for the table.

ROCKPORT, *rŏk'pōrt:* village and seaport of Essex co., Mass.; on the Atlantic Ocean, and on the Boston and Maine railroad; 32 m. n.e. of Boston. It has churches, public library, cotton mill, organ factory, isinglass manufactories, widely noted granite quarries, large fishing and farming interests, national and savings banks, public schools, and electric street railroads. The n.e. part right on the ocean at the extremity of Cape Ann known as Pigeon Cove, is picturesquely situated, has become a popular summer resort for its charming marine views and its salubrious air, and is the seat of the granite interests. Its quarries supplied the stone for the new post-office in Boston. Pop. (1890) 4,087; (1900) 4,592; (1910) 4,211.

ROCK'-SALT: common salt (chloride of sodium) occurring as a mineral and solid. It is always mixed with various impurities. It is found massive or crystallized, its crystals generally cubes, its masses very often either granular or fibrous. It is white, gray, or, owing to impurities, more rarely red, violet, blue, or striped. For its chemical and other qualities, see SALT. It is very extensively diffused, and in some places forms great rock and even mountain masses. Islands of it in the marshes of Petite Anse, n. of Vermilion Bay, La., were discovered about 30 years since, and are now worked extensively. Recent wide borings indicate vast beds in western N. Y., reached at intervals. In at least 23 states, there are wells and springs that give evidence of salt deposits. A hill of R.-S. near

Montserrat, Spain, is 500 ft. high. The island of Ormuz, in the Persian Gulf, is formed of R.-S. The Indus, in its upper course, forces its way through hills of R.-S. that rise in cliffs 100 ft. above the river. In many parts of the world R.-S. is found in beds under the soil or other rocks. Those of Cheshire in England yield almost all the salt used in Britain, great part of which is pumped from them in the form of brine. The mines of Wieliczka, in Poland, are of great extent: the workings are at depths from 200 to 740 ft., and the salt at the deepest working is the purest. Some chambers in the mines are said to be 300 ft. high. The mines give employment to 1,200 or 1,400 workmen; and they have been wrought for centuries. Vast quantities of R.-S. occur in many parts of Asia, Africa, and America. In Caramania and Arabia it is used sometimes for building houses, the dryness of the climate rendering its solubility unimportant.—The salt which crystallizes on the margins and bottoms of salt lakes may be regarded as a variety of rock-salt.—Concerning the salt of the ocean, the salt found in many desert regions as an efflorescence on the ground or on rocks, the salt with which sandstone and other rocks are impregnated, etc., see SALT.

ROCK'-SOAP: mineral consisting of silica, alumina, peroxide of iron, and water, the silica nearly one-half, the alumina and the water sometimes nearly each one-fourth of the whole. It is earthy, easily broken, black or nearly so, very soft, and easily cut with a knife, is greasy to the touch, and adheres strongly to the tongue. It is valued by painters for crayons. It is found in a number of places on the continent of Europe, and occurs in trap rocks in the Isle of Skye. It is found only massive.

ROCKVILLE, *rŏk'vĭl:* city in Tolland co., Conn.; on the Hockanum river, and on the New York and New England railroad; 15 m. e.n.e. of Hartford. The river drains Snipsic Lake, and at R. has a number of falls (aggregating 280 ft. in total fall) which furnish exceptional motive power for the milling interests that have made R. noted since 1821. There are about 20 manufacturing establishments of importance, chief of which are envelope factories, considered among the largest in the world, and others producing silks, woolens, gingham, satinet, stockinet, warps, and sewing silk. The principal public buildings are the churches, a high school, public and parish schools, and a free library (cost $100,000). The city was settled in 1716 by a colony from East Windsor: was set off from the old town of Vernon and chartered as a city by the legislature 1888–9, and held its first municipal election 1889, Dec. 2. Pop. (1900) 7,287; (1910) 7,977.

ROCK'WELL, Alphonso David: American physician: b. New Canaan, Conn., 1840, May 18. He graduated at Kenyon College, and the College of Physicians and Surgeons in New York. He is a specialist in electro-therapeutics and neurology, and held a professorship in the former subject in the Post-Graduate School of Medicine and also in the New York State Women's Hospital. He wrote *Relation of Electricity to Medicine and Surgery; Nervous Exhaustion* (1901); and, with Beard, *Treatise on the Medical and Surgical Uses of Electricity.*

ROCK'WOOD: Tenn., town in Roane co.: on the Cincinnati, N. O. & T., the Rockwood & T. R., and the Tennessee Central R.R.'s; about 40 m. w.s.w. of Knoxville, and 88 m. n. by e. of Chattanooga. It is a coal region in which there are extensive deposits of iron ore. The chief industrial establishments are blast furnaces, foundries, machine shops, and coal yards. The trade is chiefly in coal and in iron products. Pop. 3,000.

ROCKY MOUNTAIN GOAT: a goat-antelope (*Oreamnos montanus*), related to the chamois and serow, which inhabit the heights of the Rocky Mountains and Cascade Ranges between the forests and the snow line, from the 44th to the 65th degree of latitude. It is about the size of a goat, but is stouter, handsomer and has stronger legs. It is completely covered with long, thick, white hair, which forms an erect mane along the middle of the back from between the horns to the root of the tail; the shoulders are rather humped, and the head is habitually carried low. Both sexes have slender, smooth, black horns, curving backward, about eight inches long and sharp-pointed. Its pure white coat is capital protection against observation in the midst of alpine snow, and is unique, as no other white ruminant is known. Dwelling in such solitudes, they have little to fear from natural enemies, and fall an easy prey to the human hunter who has the hardihood to pursue them upon the rough mountain peaks, and skill enough to get near to them unobserved. 'Their food,' says Wister, 'seems to be chiefly the short, almost lichen-like moss that grows on the faces and at the base of the rocks, and between them in the crevices. . . . I am inclined to believe that the goat keeps consistently to the hills, whatever the season may be, and in this differs from the mountain sheep, as he differs in appearance, temperament, and in all characteristics, except the predilection for the inclined plane; and in this habit he is more vertical than the sheep.' A variety from the Copper River region, in Alaska, is marked by greater divergence of horns and some other structural characteristics, and has been called *O. kennedyi.* The flesh of the mountain goat is not very good, but its hair was utilized in weaving by the Indians of British Columbia and the coast northward: and its tanned hide has a value in market as a rug. Consult Stone and Crane, *American Animals* (1902), and authorities on travel and sport in the Northwest.

ROCKY MOUNTAINS: the North American part of the great mountain system extending along the w. side of the American hemisphere, from Patagonia in the s. to the Arctic Ocean in the n. The R. M. part of the system stands opposite the deep north Pacific Ocean up and down the whole length of the w. side of the continent. It may be primarily distinguished as in two parts, the Sierra Nevada and Coast ranges directly fronting the ocean, and the main Rocky chain which forms the great water divide of the continent. The apex of the continent is found in the region, one of the most remarkable and interesting in the world, which has been made by the U. S. govt. the Yellowstone National Park. It lies in the n.w. corner of Wyoming, hemmed in on every side by mountains of volcanic origin, the waters of which flow on the n. and w. to the Missouri and the Gulf of Mexico; on the s.w. and s. to the Columbia and the Pacific Ocean; and on the s. by Green river to the Colorado and the Gulf of California. The vast mountain region w. of long. 105° shows geographical unity, with a breadth between the 36th and 41st parallels of lat. of 800 to 1,000 m. An important subdivision is made by noting the portion of the whole system which shows a n. and s. trend of the chief ranges, forming a southern division, and that in which the chief ranges show a n.w. and s.e. trend, and form a northern division. Between the two, crosswise from e. to w., a marked orographic break occurs, in the form of a high plateau region, over which the line of the Union Pacific r.r. passes at an elevation of over 8,000 ft. The profile of the road shows an elevation of 1,060 ft. at Omaha; 6,075 ft. at Cheyenne, an ascent of nearly 10 ft. in a mile for 516 m., but appearing to follow a level plain, most of the way along the valley of the Platte; and from Cheyenne to Sherman, the summit—a distance of 33 m.—a rise of 66 ft. in a m., to an elevation of 8,271 ft. The Kansas Pacific line rises from 764 ft. at Kansas City to 5,197 ft. at Denver, or nearly 7 ft. per m. for 639 m., but seemingly over a level, treeless plain. The division n. of the plateau shows in general a lower and less impressive mountain scene than the southern, a more uniform height of the ranges and absence of dominating monarch peaks, and greater monotony of details; with, however, the remarkable exception of the Wind River Mountains, which form the culminating region of the continent, with Fremont 13,570 ft. high, and the source of waters which become the Missouri, the Columbia, and the Colorado rivers; also showing immediately n. the Yellowstone geyser region. The ascent to the Wind River range from the great plateau is by the Sweetwater, a lower range; and e. of the Wind River lies the Big Horn range, showing Cloud Peak 7,300 ft. high. Farther e. still, and quite isolated in the plain (which has an elevation of 2,500 to 3,000 ft.), are the Black Hills, between the two forks of the Cheyenne river. They cover an area about 100 m. in length and 60 in breadth, and are clothed with dense growth of pine. The peaks rise 6,000 to 7,000 ft. above the plain. The Northern Pacific r.r. strikes across the plains from the w.

end of Lake Superior to the Missouri at Bismarck, and crossing, runs almost straight to the Yellowstone, thence along that river 340 m., and crosses back to the Mo. at Gallatin, and follows it 100 m. to Helena, and there makes, by way of Mullan's Pass, the ascent of the main divide of the R. M., passing under the summit by a tunnel 3,850 ft. long, at an elevation of 5,548 ft. In their n.w. portion the R. M. include the important Bitter Root range, a part of which forms the main divide between the Missouri and the Columbia; the Lapwai and Cœur d'Alène ranges w. and n.w. of the Bitter Root; the Crazy Mountains lying isolated n. of the Yellowstone river, with numerous peaks about 11,000 ft. high; and the Judith Mountains, also isolated, further northeast.

Much nearer the Pacific than these n.e. parts of the R. M. system is found the long Cascade range, which becomes further s. the grand Sierra Nevada range, along the e. side of California. The Cascade range extends fully 500 m. through Oregon and Washington, and beyond the n. boundary of the U. S. The principal continuous ridge is comparatively low, but from it rise at irregular intervals great volcanic cones, and other remarkable peaks, apparently volcanic, but not conical. At 75 m. n. of Shasta, the last of the Sierra Nevada peaks toward the n., Mount Pitt, rises 9,718 ft. in conical form. Similar to it is Mount Jefferson 150 m. farther n., and between them are various peaks, notably a group of five, three of which, seen in the distance, are known as the Three Sisters. Somewhat less than 100 m. n. of Jefferson there occurs the great cut of Columbia river through the volcanic mass which all along here constitutes the range. The cut goes down to within about 100 ft. above sea-level. Here rise three of the best defined volcanic cones of the range, Mount Hood on the s. of the river, and Mounts Adams and St. Helens on the n., the first rising 11,225 ft. and the other two about 10,500. Mount Rainier, 75 m. n. of the Columbia, reaches an elevation of 14,444 ft., and still further n. is Mount Baker, which is known to have been active as a volcano in 1843, 54, 58, and 70. To the n. of the usual limit of the R. M. in that direction, the mountains extend without any permanent interruption to the Arctic Ocean, and Mount St. Elias, in Alaska, is a volcanic peak 17,500 ft. high.

Going back to the s. end of the Cascade range, the mountain chain becomes the grandest of the whole system within the U. S., under the name of the Sierra Nevada, which begins with Mount Shasta, 14,442 ft. high, and extends s. more than 450 m., with the highest peaks of the R. M., though not such a vast number of high peaks as in the Colorado group, and with scenery of surpassing beauty and grandeur. Some of the principal Sierra peaks are Mt. Tyndall 14,386 ft., Mt. Kaweah 14,000 ft., Mt. Brewer 13,886 ft., Red Slate Peak 13,400 ft., Mt. Dana 13,277, and Mt. Whitney 14,887 ft. The Sierra range forms the w. border of the continental plateau of which the main Rocky chain forms the e. border. The w. side of the Sierra falls nearly to the level of the sea within about 100 m., and thus

forms a grandly conspicuous scene. Evidences of volcanic action are seen everywhere, as in the Cascade range; and even now numerous hot springs and geysers appear, and earthquake shocks are frequent. Snow falls to the depth of 40 or 50 ft., and much of it remains through the year. Enormous glaciers occur on the n. side of the mountains, about 65 in number; and moraines and glacial lakes, indicating ancient glacial action, are found in great numbers. The Yosemite Valley, which has been set apart by the U. S. as a national pleasure ground, is remarkable for rugged scenery marvellously impressive and beautiful. W. of the Sierra Nevada and Cascade ranges are the Coast ranges of California and Oregon, greatly inferior in importance, but a part of the system.

The division of the R. M. is about 600 m. long from n. to s., and 300 in breadth. Its e. edge shows a double range, inclosing a system of high plateau-like valleys, or inter-mountain parks at an elevation of 6,000 to 10,000 ft., and around which the mountains rise 3,000 to 4,000 ft. higher. The chief of these inclosed spaces are the North, Middle, and South Parks, drained by the head-waters of the Platte, Colorado, and Arkansas; and the San Luis Park, in which lies the upper course of the Rio Grande. The Front or Colorado range proper is a broad lofty mass running s. from near the Union Pacific plateau, in 40° n. lat. to Pike's Peak (14,147 ft. high), with Long's Peak, also, and Gray's Peak (respectively 14,271 ft. and 14,341 ft. high). It forms the continental divide from its n. end as far as Gray's Peak, where the divide turns w. for 20 m., crossing to the Sawatch range, which it follows for 75 m. The Sawatch is one of the highest chains of the R. M. Its chief peaks are Holy Cross (14,176 ft.), and Mount Harvard (14,375 ft.), Mount Yale (14,150 ft.), Mount Princeton (14,199 ft.), and many others nearly as high. The continental divide passes from the s. end of Sawatch s.w. about 75 m. over a high region showing no range, to the San Juan range, the crest of which it follows in a s.e. direction, with many points above 13,000 ft. high, and the culminating one, Uncompahgre Peak 14,235 ft. To the w. of the Sawatch range are the Elk Mountains, a volcanic mass of sharp pinnacles, among which Castle Peak rises to 14,000 ft. The Sangre de Cristo range is almost a continuation of the Sawatch: it has Blanca Peak 14,463 ft. high. W. from the San Juan range the plateau region of sedimentary rocks, marvellously cut by cañons or ravines, extends to the Colorado river. The Uintah range is remarkable as having an e. and w. trend. It starts from the Wahsatch range and runs e. 150 m., with these chief points, Gilbert's Peak (13,687 ft.), Tokewanna (13,485), and Wilson's Peak (13,235 ft.). The Wahsatch range, one of the most conspicuous of the R. M. system, forms the w. limit of the s. division. It has a n. and s. trend, and rises nearly 12,000 ft. in that point just e. of Salt Lake City.

ROCOA, n. *rō'kō-ą* [F. *roucou:* Brazilian, *urucu*]: the vegetable pulp which yields *arnotto,* which see; also spelled Rocou or Roucou.

ROCOCO, a. *rō-kō'kō* [F. *rococo*, antiquated, old-fashioned]: having a general tendency to be bizarre in architecture, decoration, or furniture, after the French style of Louis XIV. and XV.; the name was applied first to the very debased style of architecture and decoration which succeeded the first revival of Italian architecture. It is ornamental design run mad, without principle or taste. A similar style prevailed in Germany and Belgium during

Rococo Ornament.

the 18th c., and in France during the time of Henry IV. The fig. is an example from an altar in the Church of St. James's, Antwerp.

ROCROI, *ro-krwâ':* small town of France, dept. of Ardennes, 15 m. n.w. of Mézières, a fortress of the fourth class, in a fine, extensive plain, bounded on all sides by the forest of Ardennes. Pop. about 2,200. It is memorable for the victory gained by the Great Condé (then Duke of Enghien) over the Spaniards, 1643, May 19. The Spanish army was composed of veteran bands of Walloons, Spaniards, and Italians; and their general, Don Francisco de Mellos, gov. of the Low Countries, was a commander worthy of his army. The French (22,000) were also good troops; but their general, Condé, was a young and inexperienced officer. At first, the battle was unfavorable to the French, but at last the Spaniards were thrown into irretrievable rout. The Count of Fuentes, the commander of the redoubtable infantry, and 10,000 of his men, were among the slain; and 5,000 men, with all the cannon, many standards, and the baton of the Count de Mellos, were captured. But, far beyond all material losses, the renown of invincibility, acquired by the Spanish infantry first on the field of Pavia (1525), and confirmed at St. Quentin, Gravelines, and Prague, was destroyed.

ROD, n. *rŏd* [Dut. *roede;* Ger. *ruthe*, a rod: Wal. *rudă'*, the pole of a carriage]: staff or wand as a badge of authority; a shoot or long twig; instrument of punishment or correction; measure of length containing five yards and a half, or 16½ ft.—more frequently termed a *pole* or *perch* (for the 'square rod,' used in estimating mason work, see ROOD): in *Scrip.*, a sprout, hence race or family. RODDY, a. *rŏd'dĭ*, full of rods and twigs. ROD-IRON, long slender bars of iron for making nails.

RODE, v. *rōd:* past tense of RIDE, which see.

RODENTIA, n. plu. *rō-dĕn'shĭ-ā* [L. *rodens* or *roden'tem*, gnawing—from *roděrĕ*, to gnaw]: extensive class of animals, so called from their habit of gnawing or nibbling their food, as the rat, hare, rabbit, beaver, etc. RODENT, a. *rō'dĕnt*, gnawing: N. one of the gnawers, as the rat, the squirrel, etc.—The *Rodentia* in the system of Cuvier, are an order of mammalia, almost exactly corresponding with the *Glires* of Linnæus. The order is a truly natural one, and therefore universally recognized by naturalists. The R. are small quadrupeds; the largest of them—the Capybara—not being equal in size to a hog, while to this order belong also the smallest of mammalia. They are very numerous, and widely distributed over the globe, particularly abundant in S. America, and rarest in Australia. They all are remarkably characterized by their front teeth, variously regarded as incisors and canines—the true incisors or canines being absent—which are large and of peculiar structure, two in each jaw, and separated by a considerable vacant interval from the molars. The front teeth have a plate of hard enamel in front, which wears more slowly than the substance of the rest of the tooth, so that being employed on hard substances, they acquire a chisel-like form, and unlike the teeth of mammals in general, they are always growing from a fresh pulp at the base, so that compensation is made for the wearing away at the tips; but when a tooth is accidently destroyed, the opposite tooth, continuing to grow, sometimes acquires a monstrous shape and size, from which cause rats and other rodents have been known to die, the enormous tooth preventing the eating of food, or even recurving and piercing the skull. The ordinary food of most rodents consists of vegetable substances, generally hard, and their front teeth are adapted for comminuting it by gnawing, and are used also for gnawing wood, the shells of nuts, etc., to obtain access to food. The molar teeth have flat crowns, having ridges of enamel, which make them more or less tuberculous; and these are in the line of the jaw, while the only horizontal motion of which the lower jaw is capable is forward and backward, thus making the ridges of the molar teeth powerful instruments for the reduction of hard substances; the jaws also being in general very strong. In the rodents which eat only vegetable food, the molar teeth have rounded tubercles; while in the omnivorous kind—as rats—the tubercles become sharp points. The stomach is simple; the intestines are very long; the cæcum is often large, sometimes larger than the stomach itself. The brain is not large, and is nearly

smooth, and without convolutions; the rodents are not generally distinguished for sagacity, though some of them—

Skull of the Beaver, showing the Dentition.

as the beaver—show remarkable instincts. Most of them may be easily tamed, but few of them seem capable of learning anything, and in general they merely acquire a familiarity with man, of which the rabbit is a perfect example, though the rat manifests a far higher intelligence. The eyes are directed laterally. The rodents very generally have the hinder limbs larger than the fore, and their motion is partly a kind of leaping. In some, this is as completely the case as in kangaroos. Some, as squirrels, have an admirable power of climbing trees; and a few, as beavers and water-voles, are aquatic. Most, if not all, have the habit of sitting on their haunches, and holding their food to their mouth by their fore-paws; using both paws together, however, as the fore-feet have not at all the character of a hand. The thumb is never opposable to the other toes; sometimes it is rudimentary or wanting. The bones of the fore-leg are generally separate, but have not so much freedom of motion as in the *Carnivora*. The toes are terminated by claws. The presence or absence of clavicles (collar-bones) divides the order into two sections, to the first of which, having clavicles, belong squirrels, mice, rats, voles, the beaver, etc.; and to the second, without clavicles, belong porcupines, cavies, chinchillas, hares, rabbits, etc. The rodents are very numerous, about 400 species being known.

RODERICK, *rŏd'ėr-ĭk:* last king of the Visigoths in Spain; whose tragic downfall, coincident with that of the Visigothic monarchy, has inspired poets and romancers (including historians) to throw round him a halo of glory: he began to reign 709; d. 711, July. The Spanish and Arab historians contradict each other in almost every particular of R.'s life—the Arab being, on the whole, apparently the more trustworthy. According to them, R. was of humble birth, but rose, through his talent and bravery, to the command of the cavalry. A conspiracy having been formed against Witiza, the reigning monarch, by the clergy and the nobles of Roman blood, R. was elevated to the throne 709, and by his energy and talent soon quelled all opposition. The sons of Witiza, however, joined with some malcontent Visigothic nobles—among whom was Count Julian—and agreed to summon to their assistance the Arab chief, Muza ibn Nozeir, who had just finished the

conquest of Mauritania. The Spanish writers, on the other hand, assert that the country groaned under the tyrannical government of R., that his licentious behavior had disgusted many of his nobles, and that the people were ripe for a revolution when the Moslem invasion took place. Both are agreed as to the time and mode of the invasion; but the Arab historians brand Count Julian with the most atrocious treachery, as not only voluntarily surrendering Ceuta, the key of the country, but actually guiding the 13,000 Berbers and Arabs under Tarik into Spain. A landing was effected at Algesiras, 711, Apr. 28; and in spite of vigorous opposition from the gov. of Andalusia, Tarik marched on, routing R.'s chosen cavalry, which had been sent to oppose him. R., who had been employed in another quarter, now hastened at the head of an army, which is variously estimated at 50,000 to 100,000 men, to oppose the daring invaders, who by this time had been so reinforced from Africa and by rebels that their numbers (as reported) amounted to 25,000. The two armies met on the banks of the Guadalete, near Xeres de la Frontera, and July 17 the battle commenced. R. directed the centre of his army in person, appointing the sons of Witiza to command the wings, and the battle raged furiously for three days; a single combat then took place between R. and Tarik—a kind of statement extremely frequent in eastern histories—in which the former was slain, and his head cut off, to be embalmed and sent to Muza. The Christians, enraged at the loss of their chief, fought furiously six days longer, but all in vain, for victory declared itself decisively in favor of the Moslems, to whom the sons of Witiza had deserted soon after the commencement of the contest, and the rout of R.'s army was complete. The most ancient Spanish chroniclers agree in asserting that R. either died on the field or sank in the Guadalete, while attempting to save himself by swimming his horse across; and the various stories of his escape and subsequent adventures are of much later date. This decisive victory laid all central and s. Spain at the feet of the Arabs. R. has been made the hero of an epic poem by Southey.

RODEZ, *rō-dā'*: small town of France, cap. of the dept. of Aveyron; on the crest and slope of a hill on the n. bank of the Aveyron. Its streets are steep, narrow, winding, and dirty; but the promenades around the town are pleasant. The cathedral, with a clock-tower of great height, is a Gothic structure of the 15th c. A variety of woolen cloths are manufactured, and cheese of highly esteemed quality. Pop. 16,100.

RODGERS, *rŏj'ĕrz*, Christopher Raymond Perry: naval officer: born New York, 1819, Nov. 14. He became a midshipman 1833, served in the war with the Seminoles, in the blockading force in the Mexican war, and was afterward engaged in the coast survey. In the civil war he rendered invaluable service at the battle of Port Royal, at Fort Pulaski, Charleston; and in the blockading force in the s. Atlantic; afterward commanded in foreign waters; was in charge of the bureau of docks and yards 1871–74;

and, with the exception of two years, in which he was in command of the Pacific naval force, was supt. of the Naval Acad 1874–81. He was promoted capt. 1866, commander 1870, rear-admiral 1874, and was retired 1881. He was pres. of the international conference for selecting a prime meridian 1885; d. 1892, Jan. 8.

RODGERS, John: naval officer: 1771, July 11—1838, Aug. 1; b. Harford co., Md. After serving five years in the merchant marine, he became capt. 1789, entered the U. S. navy with the rank of lieut. 1798, and was executive officer of the *Constellation* when she captured the French frigate *L'Insurgente* 1799, for which service he received a medal and was soon afterward promoted. He was active in quelling an insurrection in Santo Domingo; sailed to France with govt. dispatches 1801; went to Tripoli 1802, and the following year captured the *Meshonda*, a Moorish ship, and with the aid of another vessel destroyed a Tripolitan corsair. He returned to the United States 1803, Dec., but the following July sailed to rejoin the squadron acting against Tripoli, to the command of which he succeeded, with the rank of commodore, 1805, May 22. He secured the abolition of tribute which Tripoli had exacted from Europeans, and an edict forbidding the enslaving of captives taken from Christian nations, and obtained similar concessions from the bey of Tunis. He was stationed at New York 1805–09, and was in command of the naval force on the Atlantic coast 1809–12 to check the operations of the British who were impressing Americans into their naval service; and was in command of the *President* in the famous attack on the British war-ship *Little Belt* 1811, May 16, an action which increased the ill-feeling between the two nations, but in which R. was sustained by a court of inquiry. During the war of 1812 he captured 23 prizes, and rendered valuable service in the defense of Baltimore. He was president of the board of naval commissioners 1815–24, was in command of the Mediterranean squadron 1824–27, and again pres. of the naval board 1827–37. He died at Philadelphia.

RODG'ERS, John: naval officer: 1812, Aug. 8—1882, May 5; b. Harford Co., Md.; son of Commander John R. He became a midshipman in the navy 1828, and after serving in the Mediterranean squadron spent 2 years at the Norfolk Naval School and studied a year at the Univ. of Virginia. He was afterward at the Brazil station, served in the Seminole war, made valuable charts and sailing directions for the Florida coast, 1852–55 was with the govt. exploring expedition in the n. Pacific ocean, and was in command of the *Vincennes* in explorations of the Arctic Ocean 1855. He served with distinction in the civil war, was a volunteer in the Port Royal expedition, led the James River expedition 1862, in which he commanded the *Galena* and made the famous attack on Fort Darling; when in command of the *Weehawken* 1863 he captured the *Atlanta*, a formidable iron-clad, in Warsaw Sound, Ga.; and in the *Monadnock* he sailed the Atlantic and Pacific Oceans, passed through the Straits of Magellan,

and came to port in San Francisco. He was in command of the Boston navy-yard 1866-69; of the Asiatic fleet 1870-72; of the Mare Island, Cal., navy-yard 1873-77; in the latter year became supt. of the Washington naval observatory, which office he held at the time of his death; and 1878 became chairman of the lighthouse board. He reached the rank of rear-admiral 1869, Dec. 31.

RODIN, *rō-dăn,* AUGUST: French sculptor: b. Paris, 1840, Nov. After working in a subordinate position in several studios he exhibited for the first time in the Salon in 1875, and since then became well known as a sculptor utterly beyond the control of classical convention, and reveling in the first expression of emotion and action, yet showing a power of execution worthy of the best Renaissance art. His statue of Balzac, ordered by the government, was so palpably an attempt to suggest by a plastic achievement something beyond the range of sculpturesque expression, that it was rejected when exhibited as a cast. Yet he has done some remarkable work, as, for instance, *The Brazen Age,* exhibited as a cast, and after much discussion executed in bronze for the Luxembourg Gardens. Among other rugged and fantastic creations are *Burghers of Calais; The Kiss.* He has made busts of Bastien-Lepage, Victor Hugo, Henri Rochefort, and Jules Daloux, the sculptor.

RODMAN, *rŏd'man,* THOMAS JEFFERSON: soldier: 1815, July 30—1871, June 7; b. Salem, Ind. He graduated from West Point 1841, and for some years was engaged in testing gun-metal and superintending the making of heavy guns. He devised the method of casting cannon and shells on a hollow core which is kept cold by a stream of water; invented a gauge for determining the pressure on different parts of the gun when a charge is fired, an improved form for the ordinary cannon, and a form of Columbiad known as the Rodman gun. During the civil war he was in charge of the Watertown arsenal, but also had supervision of the making and testing of large guns. From 1865 till his death he was stationed at Rock Island, Ill. In 1865 he reached the rank of brevet brigadier-general, and he was promoted lieutenant-colonel 1867.

RODNEY, *rŏd'nĭ,* CÆSAR: patriot: 1728, Oct. 7—1784, June 29; b. Dover, Del.; grandson of William R. (1652-1708.) He was appointed high-sheriff of Kent co. 1755, during the next few years held numerous offices, was pronounced in his opposition to the tyranny of the British government, was elected to the first continental congress, and was a member of its general committee, was re-elected to congress and appointed brigadier-general of the militia, labored earnestly to stimulate the patriotism of the people in the s. part of the province, was appointed supreme court judge but declined to serve, became judge of the admiralty 1777, and major-general of the militia in the same year. He was president of Delaware 1778-82, declined re-election, and was returned to congress.

RODNEY, George Brydges Rodney, Lord: English admiral: 1718, Feb. 19—1792, May 24; b. at Walton-on-Thames; was second son of Capt. Henry R. of the royal marines. He was taken from Harrow School at the early age of 12, and sent to sea. He became lieut. in 1739; post-capt. 1742; and commander of the Newfoundland station 1748, with rank of commodore. In 1752 he returned home, and was elected M.P. for Saltash. He afterward commanded the men-of-war *Fougueux*, the *Prince George*, and the *Dublin*. In 1759, after 28 years' active service, he was made rear-admiral; and in July he bombarded Havre for two or three days, destroying the town and fortifications so effectually, that it has never recovered its former importance as an arsenal for ships-of-war. In 1761 he took Martinique, Grenada, and Santa Lucia. In 1762 he became vice-admiral, and in 1764 was made a baronet. In 1779 Spain joined France in the war against England, and their united fleets appeared in the Channel in overwhelming force. The siege of Gibraltar was undertaken by the Spaniards; and R., who was sent out with 22 sail of the line and 8 frigates to the W. Indian station, was ordered to relieve Gibraltar *en route*. After capturing seven Spanish ships of wars, he fell in, 1780, Jan. 16, with Admiral Langara, off Cape St. Vincent, which a British writer speaks of as 'that promontory which has witnessed more of our battles and triumphs than any other headland in the world.' Of the Spanish fleet, five were captured and two destroyed. Having accomplished the relief of Gibraltar and Minocra, he quitted the Mediterranean, and crossed the Atlantic to the station of his command. Apr. 17 he defeated, near Martinique, the French fleet, under Count de Guichen. Being ill-supported by his captains on this occasion, he complained to the admiralty. The naval administration of the day was, however, so corrupt that the admiralty suppressed the criminatory passages of his dispatches, and only one of the accused was brought to trial, the others being allowed to escape from the difficulty of finding a sufficient number of non-delinquent officers to try them. R. took Eustatia from the Dutch, with 250 ships and other booty, estimated at three millions sterling. Demerara and Essequibo next surrendered. 1782, Apr. 12, R., in conjunction with Hood and Drake, encountered the French fleet under De Grasse off Dominica. Each fleet comprised more than 30 ships of the line. The battle was more obstinately contested than any other engagement that ever took place between the two nations, being without intermission for nearly 12 hours. De Grasse was totally defeated, and R. lost seven ships of the line and two frigates. Owing to the French vessels being crowded with troops, they are said to have lost 3,000 killed and 6,000 wounded; while the English loss did not exceed 600. On board the *Ville de Paris* were 36 chests of money, to pay the soldiers; and the whole train of artillery was on board the other captured ships. Count de Grasse was himself taken prisoner. His flag-ship, the *Ville de Paris*, 112 guns, was the only first-rate man-of-war that, till that date, had ever been captured and carried into port; and De

Grasse, when he landed at Portsmouth, was stated to be the first commander-in-chief of a French fleet or army who had been prisoner in England since the capture of Marshal Tallard in Queen Anne's wars. In this action R. successfully executed the nautical manœuvre of breaking the French line, and placing the enemy between two fires, which had fallen into disuse since the commonwealth. R.'s victory saved Jamaica, ruined the naval power of France and Spain, and gave the finishing blow to the war. The news arrived in England just after an order had been dispatched for the recall of R., whose politics differed from those of the new ministry. He was then elevated to the peerage as Baron Rodney, and received a pension of £2,000 per annum for himself and his successors. He lived in retirement the rest of his life. Among English naval heroes he ranks next to Lord Nelson.

RODOMEL, n. *rŏd'o-mĕl* [Gr. *rhodon*, a rose; *meli*, honey]: the juice of roses mixed with honey.

RODOMONTADE, n. *rŏd'ō-mŏn-tād'* [F. *rodomontade*; It. *rodomontada*, bluster—from *Rodomonte*, a brave but proud and insolent character in Ariosto's 'Orlando Furioso': It. *rodomonte*, a vaporing fellow]: empty noisy bluster; empty vaunting or ranting: V. to boast or bluster. RODOMONTA'DING, imp. RODOMONTA'DED, pp. RODOMONTA'DIST, n. *-dĭst*, or RODOMONTA'DOR, n. *-dĕr*, one who indulges in boasting and bluster—also erroneously spelt RHODOMONTADE.

RODOSTO, *ro-dŏs'to:* town of European Turkey, on the n. shore of the Sea of Marmora, 77 m. w. of Constantinople. It contains many mosques, and sends large quantities of fruits and vegetables to the capital of the empire. Pop. 18,000.

RODRI'GO (or RUY) DI'AZ DE BIVAR': see CID CAMPEADOR.

RODRIGUEZ, *ro-drēg'*, Sp. *ro-thrē'gāth:* rugged and hilly island, 330 m. e. by n. of Mauritius, of which it is a dependency, being one of the Mascarene group. Area, about 60 sq. m. The soil is fertile: turtles abound. The island is interesting to naturalists as having been the habitat of the now extinct bird, the Solitaire (q.v.). Pop. (1890) 1,978.

ROE, n. *rō* [Icel. *hrogn*; Sw. *rom*; Dut. *roghe*, the eggs of a fish: Ger. *rogen*, spawn]: the eggs or spawn of fish. ROED, a. *rōd*, filled or impregnated with roe. HARD ROE familiarly applied to the spawn of the female: SOFT ROE, to the milt of the male. ROE'STONE, a familiar term for *Oolite*, from its being composed of a mass of small rounded grains or spherules, resembling the roe of a fish; larger-grained varieties are called *peastones* or *pisolites*, *peagrits* etc. Its scientific synonym Oolite is applied to that period in the earth's geological history in which the limestones with this structure chiefly occur.

ROE, *rō*, EDWARD PAYSON: author: 1838, Mar. 7—1888, July 19; b. New Windsor, N. Y. He studied at Williams College and the Auburn Theol. Seminary, was chaplain in the Federal army 1862–65, and 1865–74 held the pastorate

of a Presb. church at Highland Falls, N. Y. In the latter year he resigned his charge and settled on a farm which he purchased at Cornwall, N. Y., where he divided his time between authorship, in which he had already won considerable success, and the cultivation of small fruits and plants. A visit to Chicago soon after the great fire led to the writing of his first novel, *Barriers Burned Away* (1872), of which 69,000 copies were called for, and ten years later a cheap edition of about 100,000 copies was sold. All his stories deal with American life and scenery. Country life is described in *Nature's Serial Story*, the Charleston earthquake furnished interesting features in *The Earth Trembled*, and tenement-house life in New York is described in *Without a Home*. Among his numerous other works were *Opening a Chestnut Burr* (1874); *From Jest to Earnest* (1875); *A Knight of the Nineteenth Century* (1877); *Success with Small Fruits* (1880); *A Young Girl's Wooing* (1884); *Driven Back to Eden* (1885); and *Miss Lou* (1888). The MS. of the latter work was completed only a few days before his death. It is said that his stories have had a larger aggregate sale than those of any other American author. All his writings were marked with a purity of tone and a moral earnestness, which were recognized by all who knew him as characteristic of his personality, which was also peculiarly winning. He died, very suddenly, at his home in Cornwall.

ROE, *rō*, or ROE-DEER [Ice. *vá;* Ger. *reh, rehbock*, small kind of deer: Dan. *raa*], (*Cervus capreolus*, or *Capreolus dorcas*): small, elegantly formed, and agile species of Deer (q.v.), inhabiting Europe and parts of Asia, chiefly in hilly or mountainous regions that are either covered with forests or with scattered bushes and heath. It is seldom found in the higher and more naked mountain tracts, the haunt of the stag or red deer. It was formerly

Roebuck (*Cervus capreolus*).

plentiful in Wales and in hilly parts of England, as well as in s. Scotland. The R. is about 2 ft. 3 inches in height at the shoulder; weight about 50 or 60 lbs. Its color is a

shining tawny-brown in summer, more dull and grizzled in winter, the lower parts and part around the tail white. There is considerable variety in the shade of color. The hair is longer than in many deer. The tail is very short, concealed among the hair. The horns, which are peculiar to the male (the *Roebuck*), are eight or nine inches long, erect, round, very rough, longitudinally furrowed; having, in mature animals, two tines or branches, which, as well as the tip of the horn, are sharp-pointed, so that the horns of the R. become very dangerous weapons when used for offense. The ears are large. The habits of the R. somewhat approach to those of the goat, or even of the chamois. It keeps its footing on rocks with great security, bounds very actively, and takes great leaps. Its usual pace, when not very hard pressed, is, however, a kind of canter. It is not gregarious, not more than a buck and doe with one or two fawns being usually seen together. Contrary to what is usual among deer, the male and female R. remain attached during life. The voice of the R., resembling that of a sheep, but shorter and more barking, is often heard through the night, in regions where it is plentiful. The browsing of the R. is very injurious to young woods, which has led to its extirpation in places where it would otherwise have been cherished. It feeds much on tender shoots of trees and bushes as well as on herbage. The venison is superior to that of the stag, but not equal to that of the fallow-deer. The horns are used for handles of carving-knives, etc. The R. is never very thoroughly tamed, and when partially so, is apt to become mischievous, and the male dangerous.—Another species of R. (*Cervus* or *Capreolus pygargus*), rather larger than the common R., is found in Tartary.—*Roebuck* is the male of the roe-deer: *Roe* is improperly applied to the adult female of the hart.

ROEBLING, *rō'blĭng*, JOHN AUGUSTUS: civil engineer: 1806, June 12—1869, July 22; b. Prussia. He studied at the Royal Polytechnic School, Berlin, giving much attention to methods of constructing suspension bridges; graduated 1826, and for three years was in the govt. service as asst. engineer in building military roads. He then removed to Penn. and engaged in farming, but soon became interested in inland navigation through canals, and afterward in building of railroads and bridges. He surveyed the line of the Pennsylvania railroad over the Alleghany Mountains, constructed an aqueduct across the Alleghany river at Pittsburgh, supporting the structure by wire cables, built the suspension bridge at the same city over the Monongahela river 1846, and 2 years later built several suspension aqueducts for the Delaware and Hudson canal. He was the first man to manufacture wire, and wire cables, in America. After finishing the works above named he removed his manufactory to Trenton, N. J. In 1851 he began the famous suspension bridge over the Niagara river, with a span of 825 ft., supported by 4 cables each 10 in. in diameter; which was completed in 4 years, was the first railroad suspension bridge built, and was

a marvel of engineering skill. He afterward built at Pittsburgh a fine bridge over the Alleghany river, and one over the Ohio river to connect Cincinnati and Covington. He was selected 1868 as chief engineer of the great East River bridge connecting New York and Brooklyn, prepared all the plans and specifications, and was superintending the initial operations of its construction when he received an injury which necessitated the amputation of one of his feet, and was followed by lockjaw which caused his death. The noble structure is his monument—designed by him, though its practical achievement is due to his son.

ROE'BLING, Washington Augustus: civil engineer: b. 1837, May 26, at Saxenburg, Penn. He studied civil engineering at the Rensselaer Polytechnic Institute, graduated 1857, and began work under his father. He was in the Union army, serving with great credit through nearly all the civil war, and reaching the rank of maj. by promotion and col. by brevet. He assisted his father on the bridge at Cincinnati, and spent about a year in Europe studying the subject of pneumatic foundations. On the death of his father, 1869, he became chief-engineer of the East River bridge, the practical work on which had not then been commenced. His arduous labor on this vast and difficult construction soon seriously and permanently impaired his health; he was obliged to spend some time in Europe, and was long confined to his room; but retained full charge of the bridge till its completion 1883. During his illness his wife rendered him invaluable assistance in looking after details of the work. Since the completion of this bridge, the finest on the suspension principle in the world, he has been engaged in manufacture of wire. He published *Military Suspension Bridges* (1862).

ROEBUCK, *rō'bŭk*, John Arthur: English politician: 1801–1879, Nov. 30; b. Madras, India. He passed his youth in Canada. At the age of 23, he came to England, and was called to the bar at the Inner Temple 1831. He entered parliament from Bath as a radical reformer 1832, serving till 1837; was again elected 1841, and held his seat till 1847. He represented Sheffield 1849–68, and was again returned 1874. In 1855 his motion for inquiring into the condition of the army before Sebastopol, was carried by an immense majority, and the administration of the Earl of Aberdeen was shattered to pieces. The ultimate result was the reconstruction of the war dept., and reorganization of the military, commissariat, and medical systems. On the annexation of Savoy and Nice 1860, R. indulged in the sharpest invective against Emperor Napoleon. During the civil war in the United States he strongly favored the secessionists. He warmly supported the Earl of Beaconsfield's policy during the Eastern crisis 1877–8, and 1878 was made a member of the privy council. R. was fearless and unmeasured in attack, not too charitable in his judgments, fond of personalities, but was regarded as an honest Englishman. He was author of a work on the *Colonies of England*, etc.

ROEDIGER, *rē'dĭg-ĕr,* EMIL: German orientalist: b. Sangerhausen, Thuringia, 1801, Oct. 13; d. Berlin, 1874, June 15. He studied at Halle, where in 1830 he became extraordinary and in 1835 ordinary professor of oriental languages. He removed to a similar post in Berlin in 1860 and remained there until his death. He continued the work of Gesenius' *Novus Thesaurus Philologicus Criticus Linguæ Hebraæ et Chaldææ Veteris Testamenti, Editio ii.,* with indexes, additions, and corrections (1858). He edited Gesenius' *Hebrew Grammar,* and wrote *De Origine et Indole Arabicæ Librorum V. T. Historicorum Interpretationis Libri Duo* (1829).

ROELOFS, *rē'lōfs,* WILLEM: Dutch painter and naturalist: b. Amsterdam, 1822, Mar. 10. He early made his home in Utrecht, where he learned to appreciate the beauty of the Netherlands landscape. In 1845 he began his art career in The Hague, and three years later went to Brussels, thus completing his studies of the Dutch masters. From Belgium he passed to France and received the great artistic impulse of his life from the French landscape painters who represent the aspects of nature as interpretative of spiritual moods. Thus he learnt to depict what we may style the transitions of color and light in scenery with a certain dramatic intensity, and preferred the portrayal of dazzling light effects, and violent contrasts in color; as when the sunlight pours like a torrent through gaps of leafage into the dark forest depths. He has traveled through the whole of Holland and gathered subjects and *motifs* for his pictures from many obscure and unfamiliar spots, painting with equal facility in oil and water-color. He is also a skilful etcher. As a naturalist he is well known among students of entomology.

ROENTGEN, *rĕnt'gĕn,* WILHELM KONRAD: German physicist: b. Lennep, Prussia, 1845, Mar. 27. He was educated at Zürich; became Kundt's assistant at Würzburg in 1870, and at Strasburg in 1872; was made lecturer at the latter in 1874, and professor extraordinary in 1876. In 1879 he was appointed professor ordinary at Giessen, in 1888 at Würzburg, in 1899 at Munich. He published in the *Annalen der Physik und Chemie* the results of numerous experimental labors; but he is best known for his discovery in 1895 of the Roentgen rays (see X-RAYS), which proved capable of such wide application in surgery and other fields, and for which he received in 1901 the Nobel prize for physics. It was while following up the researches of Hertz and Lenard on the problem of the cathode rays from a vacuum tube that Roentgen discovered the X-rays. He had encased a Crookes tube in a covering of black paper impervious to ordinary light, but noticed that a sheet of paper sensitized with barium platino-cyanide, which was lying near by, was rendered luminescent. Investigation showed that the effect was caused by invisible ways or waves emanating from the tube.

ROERMOND, *rôr-mōnt'* (Fr. Ruremonde, called also by old writers Godsward [i.e., God's Island] op de Maas): old but lively town in the Netherlands, province of Limburg, at the junction of the Roer and the Maas. A suburb called St. Jacob is connected with R. by a beautiful stone bridge over the Roer. The cathedral is one of the handsomest churches in the Netherlands. Principal industries are weaving woolen cloths, cottons, making paper, pipes, wax and tallow candles, cotton-spinning, calico-printing, refining salt, etc. R. has often endured the horrors of being besieged and taken. Pop. 12,350, mostly Rom. Catholics.

ROGATION, n. *rō-gā'shŭn* [F. *rogation*, rogation-day—from L. *rōgātiōnem*, a question—from *rogo*, I ask: It. *rogazioni*, rogation-week]: litany; supplication. ROGATION-WEEK, the second week before Whitsunday, so called from the prayers offered up on the first three days for the fruits of the earth, or as a preparation for the devotions of Holy Thursday—called specially ROGATION-DAYS. The *R.-days* (Lat. *Feriæ Rogationum*), are the Monday, Tuesday, and Wednesday before Ascension-day, so called because on these days the Litanies (q.v.) were appointed to be sung or recited by the clergy and people in public procession. The practice of public supplications on occasion of public danger or calamity is traceable very early in Christian use; but the fixing of the days before Ascension for the purpose is ascribed to Mamercus, Bp. of Vienne, in the middle of the 5th c., who, on occasion of a threatened earthquake or other public peril in his city, ordered a public procession and prayer, for averting the Divine anger. The usage being in harmony with the spirit of the times, became general and permanent, and the form of prayer employed is that known as the *Litany of the Saints*. In England, after the Reformation, the recitation of the Litanies on these days was discontinued; but a memorial of the old practice long survived in the so-called Perambulation of Parishes (q.v.). The R. days are observed as days of fasting and prayer.

ROGER, *rŏj'ĕr*, I., Count of Sicily and Calabria: founder of the Norman dynasty in these countries: about 1031–1101, July 11; b. Normandy; youngest of the 12 valiant sons of Tancred de Hauteville. He joined (1058) his brothers (see GUISCARD), who had gained possession of the greater part of s. Italy; was deputed by his brother Robert to conquer Calabria, which he speedily did. In 1060 he took from the Saracens and fortified Messina, making it the base of his future operations; and being joined by Robert, the two, at the head of their small band, performed almost miraculous exploits. They were gradually joined by the Christian inhabitants, and 1072 Palermo, cap. and stronghold of the Saracens, was yielded to the invaders. R. was then invested by his brother with the crown of Sicily, under the title Count; but not till 19 years afterward did he thoroughly supplant the Saracens, owing to the repeated reinforcements they received from Africa. R. had previously divided the country into fiefs, which he now distributed among his chief barons, whose relations to their subjects were regulated by him with justice and moderation. He had (1062) received from Rob-

ert a share of Calabria, to which, on Robert's death he added (1085) a number of towns, wrested from Roger and Bohemond, Robert's two sons. He was now the chief of the Hauteville family; and the fame of his exploits, and the greatness of his power, caused his alliance to be courted by the first princes of Europe. At this time he took the title 'Grand Count,' to distinguish him from his vassal barons, and 1098 he received from Pope Urban II. various prerogatives. The last acts of his life were the building and endowing of churches and monasteries, among others the Cathedral of Messina (1097). He died at Milcto in Calabria.

ROG'ER II., King of Sicily: about 1093–1154, Feb. 26 (reigned 1130–54); second son of Roger I. He greatly extended his dominions, adding the remainder of Calabria, Apulia, and claiming suzerainty, under gift of Anacletus the antipope, over the duchies of Naples and Capua. In return, R. established Anacletus on the pontifical throne 1130. At last, his bitter enemy, Innocent II., who had now become pope, fell into his hands 1139, and as the price for his liberty, was compelled to withdraw the excommunications that he had pronounced against R., and to consent to his retaining his new territories (except Naples), obtaining thus the firm attachment of R. to the papal see, and his own recognition as lawful pope. In 1141 R. received from Pope Lucius II. the right of using the staff, ring, tunic, mitre, and other symbols of ecclesiastical dignity and power. In 1146 he revenged himself on the Greek emperor, who had been of the league against him, by capturing Corfu, and pillaging Cephalonia, Negropont, Corinth, and Athens, returning with an immense booty, and a number of workers in silk who introduced the silk manufacture into Sicily. He next took Tripoli and other places on the African coast; and left at his death, an African dependency which stretched from Morocco to Kairwan. He died at Palermo. R. was, like his father, prudent and resolute, skilful in the cabinet and on the field; but he had neither the fine deportment nor the generous soul of the first Roger. His mind was capable of great scope and untiring energy, so that the material interests of his states were never overlooked, and the system of taxation and government was a pattern to the rest of Europe. He cared nothing for the religion of his subjects—they might be heathens if they chose; but obedience to himself and respect to the laws were rigorously enforced. His fleet was supreme on the seas, and his court surpassed in magnificence that of every other prince in Europe. He spent many of his later years in rearing splendid religious edifices.

ROGERS, *rŏj'ĕrz*, HENRY: English Congl. theological teacher and writer: died 1877, Aug. 20. He was educated at Highbury for the Congl. ministry, became prof. of Eng. literature in University College, London; was appointed to a theological professorship near Birmingham, and became principal of the Lancashire Congl. College 1858. *The Eclipse of Faith* is his best-known book. *Reason and Faith* was published 1866; *The Superhuman Origin of the Bible Inferred from Itself* 1874.

ROG'ERS, James Edwin Thorold: 1823–1890, Oct. 12; b. West Meon, Hampshire, Eng.: political economist. He was educated first at King's Coll., London, and entered Magdalen Hall, Oxford, 1843; he graduated with highest honors 1846. Soon afterward he took orders in the Church of England, but formally renounced them some years later when enabled so to do by act of parliament. Till 1856 he was a private tutor at Oxford, and acted as examiner in the final classical school 1857,8; was appointed Drummond prof. of political economy 1862, but on the expiry of his term 1867, was denied reappointment, on account of his radicalism. He sat in parliament for Southwark 1880–86. On the death of Bonamy Price, his successor as prof. of political economy, R. was again appointed to that chair, 1888, with unanimous approval of friends and opposers. A few of his numerous publications are: *The History of Agriculture and Prices in England from* 1259 *to* 1793 (6 vols. 1866–88), his greatest work; *The Economic Interpretation of History* (1886); *Six Centuries of Work and Wages* (1885), of which the author prepared and published two different abridgments; *The First Nine Years of the Bank of England* (1887).

ROG'ERS, John, D.D.: English clergyman and martyr: 1505–1555, Feb. 4; b. Birmingham; educated at Cambridge. While officiating as chaplain to an English company at Antwerp for several years, he renounced popery, through the influence of Tyndale and Coverdale, and became pastor at Wittenburg. In 1548 (the year following the accession of Edward VI., when a new impulse was given to the Reformation, under Abp. Cranmer), he returned to England. Bp. Ridley made him rector of St. Margaret Moyses and vicar of St. Sepulchre, London; also prebendary of St. Paul's and St. Pancras, and, later, rector of Chigwell. On the Sunday following the triumphal entry of Queen Mary into London, 1553, Aug. 3, he addressed the people at St. Paul's cross, inveighing against popery, and exhorting them to abide in the reformed faith taught in the preceding reign. Arraigned before the privy council, his defense procured him release; but, Aug. 18, he was ordered to confine himself to his own house, and, six months later, he was imprisoned in Newgate. At his trial before Bp. Gardiner 1555, Jan., he was condemned to be burned at Smithfield. To the last he exhibited fortitude and calmness. He translated Melanchthon's *Weighing and Considering of the Interim.* His most important work was an ed. of the Bible, 1537, in which he combined Tyndale's and Coverdale's versions with his own supplementary work, and added notes; it was published under the assumed name of Thomas Matthew, and by that name it is known. His record of his examinations, and other papers, written while he was a prisoner, were preserved, and are in *Foxe's Martyrology*

ROG'ERS, JOHN: sculptor: b. Salem, Mass., 1829, Oct. 30 He studied at the high school in Boston, and after serving as clerk in a dry goods store, worked in a machine shop, where he began modelling in clay. He visited Europe 1858, and the next year made a group for a Chicago fair which gave him some reputation. *The Slave Auction,* 1860, greatly increased his fame. He produced a large number of statuette groups which became extremely popular. They are known as Rogers's Groups, and illustrate a wide variety of subjects, from common life to characters from Shakespeare. His fine equestrian statue of Gen. Reynolds was placed before the city hall in Philadelphia. He died 1904, July 26.

ROG'ERS, RANDOLPH : sculptor: born Waterloo, N. Y., 1825, July 6. At the age of 23 he began the study of art in Rome ; had a studio in New York 1850–55, and after the latter date lived in Italy. One of the works that first brought him into notice was *Ruth* (1851). The bas-reliefs on the bronze doors of the National Capitol, which represent scenes in the life of Columbus, were designed by him 1858. Three years later he completed the Washington monument at Richmond, to which he added various statues and ideal figures ; and soon afterward completed the *Angel of the Resurrection* for the monument of Col. Colt, at Hartford. Among his works are memorial monuments in Providence and other cities ; portrait statues of Lincoln, in Fairmount Park, Philadelphia ; and of William H. Seward, in Fifth Avenue and Broadway, New York ; and an equestrian group of American Indians. He d. 1892, Jan. 15.

ROG'ERS, ROBERT: soldier: 1727—about 1800; b. Dunbarton, N. H. In the old French war he organized and led a company which became famous under the name Rogers's Rangers. He received from Pontiac the surrender of Detroit; visited England, printed and gave his *Journal* to the king; was appointed gov. of Mackinaw, Mich.; but was suspected of a design to betray the fort to the French, and was court-martialled at Quebec. He made another visit to England 1769; and having returned to the colonies, was arrested, early in the revolution, and released on parole by the continental congress; was afterward suspected as being a spy, and was again examined by congress; and at length in spite of his parole, became a col. in the British army and organized an efficient company known as the Queen's Rangers. He afterward went to England, and was proscribed by congress 1778. He published *A Concise Accountof North America* (1765), and other works. He died in England, 1892, Jan. 15.

ROG'ERS, SAMUEL: English poet, littérateur, and celebrated entertainer of celebrities: 1763, July 30—1855, Dec. 18; b. London; son of a wealthy banker, who was a member of a dissenting church. After a careful education R. was placed in his father's bank. His taste for literature and the company of literary men awoke in youth; and he with a friend, went one day to call on Dr. Johnson, then living at Bolt Court; but his courage failed him when his hand was on the knocker. In 1786 he published his

first book, *An Ode to Superstition, and Some Other Poems.* In 1792 he published *Pleasures of Memory,* a work received at the time with much favor: it was the last great effort of the 18th c., poetic diction—carefully elaborated, elegant, serious, elevated, and aiming to elevate familiar things and commonplace thoughts by presenting them in abstract terms and impressive imagery; but frigid and lifeless. After this, R. retired from business, and in the possession of ample wealth, in his house in St. James's Place, he employed himself with literature, his cook, the company of the literary celebrities of his time, and the collecting of pictures and articles of virtù. Then, and during all his subsequent life, his breakfasts were more famous than his poems: critics might find fault with the one, but not with the other. His house became the literary social centre for London: all celebrities could be met there. R. not only entertained, he also generously aided literary men in their troubles: he helped Sheridan in his last days, and Moore and Campbell in their need, and others less distinguished.

In 1812 he published *Columbus;* in 1814, *Jacqueline* appeared in the same vol. with Lord Byron's *Lara.* In 1819 he issued *Human Life;* in 1822, *Italy,* an edition of which, illustrated by the best artists at the cost, it is said, of $75,000, appeared 1836. After this date, he published nothing—his time being given mainly to taste, dining, epigram, and anecdote. The aged poet rode or strolled in the parks haunted picture-galleries, and was a constant attender at the opera. An accident in the street at last confined him to his room; and at the age of 93 he died. He read Goldsmith's *Traveller* when it was published, and he might have read Tennyson's *Maud.* He published his first book before Burns's first volume appeared at Kilmarnock.—Since R.'s death his *Table Talk* has been published. R.'s best work is his *Italy,* which has long had numerous readers: it is instructive, vivid, interesting, graceful, and pleasing in style.

ROG'ERS, William Barton, ll.d.: geologist: 1804, Dec. 7—1882, May 30; b. Philadelphia. He studied at William and Mary College, in which institution he became prof. of physics and chem. 1828, holding the position 7 years. He was prof. of geology and nat. philos. in the Univ. of Virginia 1835–53, and in the former year organized a geological survey of Va., of which he published 6 reports, re-issued as *Papers on the Geology of Virginia.* With his brother, Henry Darwin R., he developed the wave theory of mountain-chains. Removing to Boston 1853, he became active in scientific circles, was one of the founders and the first pres. of the Massachusetts Institute of Technology; pres. of the Amer. Assoc. for Advancement of Science 1875, first pres. of the Amer. Social Science Assoc., one of the founders of the National Acad. of Sciences, and its pres. for the four years preceding his death. He died at Boston.—His brother, James Blythe R., m.d. (1802–1852, June 15; b. Philadelphia), was educated at William and Mary College, became prof. of chem. in Washington Medical College, Baltimore; afterward prof. at Cincinnati: and assisted his brother, Wil-

liam Barton Rogers, in the geological survey of Virginia; removed to Philadelphia 1840 and assisted his brother, Henry Darwin Rogers, Penn. state geologist; was professor of chemistry at the Franklin Institute 1844-47, and from 1847 in a similar position in the University of Pennsylvania.—Another brother, Robert Empie Rogers, LL.D. (1813-1884; b. Baltimore), studied medicine and chemistry at the University of Pennsylvania; was professor of chemistry in the University of Virginia 1842-52; succeeded his brother, James Blythe Rogers, as professor in the University of Pennsylvania, a position which he held for 25 years, being dean of the medical department 1856-77. He was professor of chemistry in Jefferson Medical College 1777-84. He held government positions involving duties at the mints.

ROGET, *rō-zhā'*, Peter Mark: English physician: b. London, 1779, Jan. 18; d. Malvern, Worcestershire, 1869, Sept. 12. He was educated at the University of Edinburgh and was appointed physician to the Manchester Infirmary in 1804. In 1808 he removed to London, where he became physician to the Northern Dispensary. He was elected a fellow of the Royal Society in 1815 and for 20 years served as its secretary. He was professor of physiology at the Royal Institute in 1833-6, and in 1837 was active in the establishment of the University of London, in the senate of which he continued a member until his death. He retired from practice in 1840 and devoted himself to literature and to mechanics, for which he had decided talent. He wrote *Animal and Vegetable Physiology Considered with Reference to Natural Theology* (1834); *Physiology and Phrenology* (1838); and the famous *Thesaurus of English Words and Phrases* (1852).

ROGIER, *rō-zhē-ā*, Charles Latour: Belgian statesman: b. St. Quentin, 1800, Aug. 17; d. Brussels, 1885, May 27. He was educated at the University of Liège, and at the outbreak of the Belgian revolution in Sept., 1830, became a revolutionary leader in Brussels. On Sept. 24 he was made president of the administrative commission, and later went as a delegate of the provincial government at Antwerp. After an armistice had been arranged with Holland, he exercised absolute power in the reorganization of the administration of the city. He represented Liège in the National Congress, voted to establish a hereditary monarchy, and proposed the adoption of the elective second chamber. He became governor of the province of Antwerp in 1831, and the next year minister of the interior. He retired in 1834, after having carried a law providing for the establishment in Belgium of the first railway in Europe. From 1834 to 1840 he was again governor of Antwerp; and leader of the Liberal party in opposition 1841-7. He became prime minister and minister of the interior in 1847, and by his energy and foresight Belgium escaped the revolutionary crises that involved Europe in 1848. In 1850 he organized secondary

education under control of the state; but retired from office in 1852. Again becoming prime minister in 1857, one of the first acts of his ministry was the fortification of Antwerp. In 1861 he became minister of foreign affairs. He retired from ministerial office in 1868, though he sat for Tournai until his death.

ROGUE, n. *rōg* [F. *rogue,* supercilious: Bret. *rok, rog,* haughty; insolent]: an idle disreputable person; a vagrant; a sturdy beggar; a dishonest person; a familiar term of slight endearment; a sly fellow. ROGUERY, n. *rō'gėr-ĭ,* cheating; dishonest practices; waggery. RO'GUISH, a. *-gĭsh,* fraudulent; dishonest; waggish; slightly mischievous. RO'GUISHLY, ad. *-lĭ.* RO'GUISHNESS, n. *-nĕs,* the quality or state of being roguish; mischievous; sly cunning.

ROHAN, HENRI DE, *ŏn-rē dė rō-ân,* DUKE OF: French general: b. Castle of Blain, Brittany, 1579, Aug. 21; d. Konigsfeld, 1638, Apr. 13. In his 16th year he joined the court of Henry IV., whose childless marriage led him to entertain the hope that, as a very near relative, he might one day succeed him in Navarre, but in 1610 the assassination of the king dashed all his hopes. The opposing parties again flew to arms and Rohan placed himself at the head of the Calvinists. But Louis XIII. and Richelieu, the all-powerful minister, annihilated the political existence of the Huguenots. Rohan then withdrew from his native land, and in exile wrote *Mémoires sur les Choses advenues en France depuis la Mort de Henri IV.* (1630). In the wars of Venice against Austria he commanded the troops of the republic till the Peace of Cherasco in 1631. Later he went to Geneva, where he composed his *Mémoires et Lettres sur la Guerre de la Valteline* (1638). In Germany the Roman Catholic league had made war against the Protestants, and Rohan in 1638 joined Bernard of Weimar, then commanding the Protestant army on the Rhine. He was wounded at the battle of Rheinfelden, 1638, Feb. 28. He also wrote *De l'Intérêt des Princes et Etats de la Chretienté* (1638).

ROHLFS, *rōlfs,* ANNA KATHERINE GREEN: American novelist: b. Brooklyn, N. Y., Nov. 11, 1846. She was graduated from Ripley College (Poultney, Vt.) in 1867, and in 1884 was married to Charles Rohlfs. In 1878 she won a great success with *The Leavenworth Case,* a detective story with an ingenious and well-elaborated plot. With the exception of a dramatic poem, *The Defence of the Bride* (1882), and a drama, *Rifisi's Daughter* (1887), her other works follow similar lines. Among the titles are: *A Strange Disappearance* (1879); *The Mill Mystery* (1886); *7 to 12* (1887); *A Matter of Millions* (1890); *Marked Personal* (1893); *Dr. Izard* (1895); *That Affair Next Door* (1897); *The Circular Study; The Filigree Ball* (1903); *The Millionaire Baby; The House in the Mist* (1904); *The Chief Legatee* (1907); *The Mayor's Wife* (1907).

ROHTUK, *rō tŭk':* town of Brit. India, cap. of the dist. of R., in the division of Hissar, Punjab, 42 m. n.w. from Delhi. A water-course, 45 m. long, constructed by order of the British govt. 1825, supplies R. and the neighboring country with water from the great Feroze-shah canal. Pop. (1881) 15,699; of dist. 553,609.

ROIL, v. *royl* [Icel. *rugla*, to mingle together in confusion]: to render turbid, as wine or other liquor, by stirring up the sediment; to excite to anger or resentment; to vex and disturb. Roil'ing, imp. Roiled, pp. *royld.* Also spelled Rile, v. *rīl.* Ril'ing, imp. Riled, pp. *rīld.*

ROIL, v. *royl* [Icel. *róla*, to wander about: Swiss, *rollen*, to run hither and thither]: in *OE.*, to range; to wander about. Roil'ing, imp. Roiled, pp. *royld.*

ROISTER, v. *roys'tėr* [F. *rustre*, a swaggerer; OF. *ruste*, a rustic—from L. *rustĭcus*, rustic—from *rus*, the country: comp. Bret. *rouestler*, a disturber: Gael. *riastair*, to become turbulent: Low Ger. *rastern*, to clatter]: to behave turbulently; to bluster. Rois'ter, n., or Rois'terer, n. *-ėr*, a rude, blustering, turbulent fellow. Rois'tering, imp.: Adj. noisy; uproarious; violent. Rois'tered, pp. *-tėrd.* Roist'ing, a. OE. for Roistering.

ROJESTVENSKY, Sinovi Petrovich, *rō'jĕst-vĕn'skĕ*, Russian naval commander; b. 1848, Nov. 11; d. 1909. He studied at the Michael Artillery Academy, and was noted as a brilliant cadet whose specialty was gunnery. He entered the navy at an early age, and came into prominence during the Russo-Turkish War in 1877, when as lieutenant on board the gun-sloop *Vesta*, commanded by Capt. Baranoff, he was said to have fired the shot which, after a five-hours' fight, disabled and put to flight the Turkish iron-clad *Fethi Bouland.* The story was denied by Hobart Pasha and the English engineer of the Turkish war-vessel, and Rojestvensky confessed that the tale was a fabrication of Capt. Baranoff, who was deprived of his rank as adjutant to the Czar, conferred for the merit of his supposed heroic action; two shots at long range had been exchanged, when the Vesta prudently retired. Rojestvensky was promoted to be commander in 1885, and in the same year was appointed naval attaché to the Russian Embassy in London. He spent several years in England and made a special study of the English methods of organizing and equipping the ships of the navy, becoming favorably known for his indefatigable industry; on one occasion being asked 'what his favorite pastime was?' he laconically replied 'Work,' and on being further asked, 'Then, what is your hardest work?' the answer was equally concise: 'Idleness.' Anxious for active service in the profession he had chosen, Rojestvensky applied for a command and was assigned to the *Vladimir Monomach*, one of the finest cruisers of the Russian navy at that time. Later he was transferred to the battle-ship *Peresviet* and as second in command to Admiral Alexieff was with that

commander in the waters of the Far East during the Chino-Japanese War and for several years after, becoming accurately acquainted with every port and harbor on the Chinese and Japanese coasts. He was promoted rear admiral in 1902, made an aid-de-camp to the Czar, and succeeded Adm. Avellan as Chief of the Naval Headquarters staff and head of the Intelligence Department, in this latter position becoming responsible for the equipment of the Baltic Fleet which was commissioned to proceed to the Pacific to raise the siege of Port Arthur after the disasters to the squadrons in those waters in 1904. Rojestvensky was considered a cool-headed leader with a scientific knowledge of sea-fighting unsurpassed in the Russian service, and the superior of Admiral Makaroff as a sailor and tactician. He took command of the Baltic or Second Pacific Fleet, as it was officially known, in September, and kept it constantly drilling in maneuvers and gun practice. He left Libau, Oct. 16, and on the night between Oct. 22-23, fell in with a British fishing fleet in the North Sea. Under the impression that they were Japanese torpedo boats, which he had been informed were in the vicinity, he fired upon the innocent fishermen. This hostile act led to an international commission of inquiry at Paris in January, 1905, which excused the admiral, but condemned the firing, and mulcted the Russian govt. in damages and costs. Rojestvensky, with the main division of his fleet, sailed around the Cape of Good Hope, and arrived at the port of Nossi Bé, on the north coast of Madagascar at the beginning of January, where he was joined by Rear-Admiral von Voelkersam, who, with the cruiser squadron, had travelled by way of the Mediterranean and the Suez Canal. Here the fleet wintered; the fall of Port Arthur, Jan. 2, 1905, making that port no longer an objective, the Russian Admiralty formulated a naval campaign for the spring, and Rojestvensky left Nossi Bé Mar. 16, arriving in the Strait of Malacca in the first week of April and passing Singapore Apr. 8. Again availing himself of French neutrality, he sought the French Indo-China coast, there to re-coal, re-victual, and await the arrival of a squadron under Adm. Nebogatoff. His prolonged stay at Kamranh Bay led to diplomatic exchanges between the Japanese and French governments and Rojestvensky was ordered to leave. He courageously sought the most direct route to Vladivostok, and on the morning of Saturday, May 27, 1905, was discovered by Togo, the Japanese admiral (q.v.), near the Tsu islands, steaming through the Strait of Corea. Here he was attacked by Togo with his battleships from the west, by the light cruisers under Uriu on the north and the heavier squadron of cruisers under Kamimura on the south. He was thus surrounded, on three sides, by the Japanese vessels, and on the fourth side was the coast of Japan, whence the

Japanese commanders tried to drive his squadron. The fire from the Japanese vessels was very effective, whereas the Russian gunners invariably shot wide of the mark and immediately showed their inferiority. By Saturday night two of the Russian ships had been sunk and during the night seven more succumbed. The battle was carried on all day Sunday, two armored cruisers being sunk, two battleships and two coast defense ships captured, and one blown up by her commander. Three cruisers under Admiral Enquist escaped to Manila, where they were interned; the cruiser Almaz and three destroyers escaped to Vladivostok and one destroyer to Shanghai.

The Russian loss was appalling; the squadron was nearly annihilated; beside which the dead numbered 7,000 and the captured over 4,000, among whom was Admiral Rojestvensky, who was seriously wounded, a fractured skull necessitating an operation at the Sasebo Naval Hospital, to which he was taken. He was afterward released by the Japanese. See RUSSO-JAPANESE WAR.

ROLAND, *rō'land*, LEGEND OF: one of the most ancient and popular epics of early French or Frankish literature; having for its hero Roland, according to tradition, the favorite nephew and capt. of Emperor Charlemagne. In 778, when Charlemagne was engaged at Paderborn in organizing the government of the recently-subjugated pagan Saxons, and superintending their collective baptism and formal admission into the Christian Church, he was visited by a Saracen chief, who unwilling to recognize the supremacy of the Caliph of Cordova, offered to put the Frankish sovereign in possession of several towns s. of the Pyrenees which were under his rule. Charlemagne, accepting the offer, marched with a numerous army through the territory of Gascony, whose duke, Loup, he constrained to do him homage, and took Pampelona and Saragossa. Finding, however, that his Saracen ally gave him but little aid, he turned back toward France; and it was during this retreat, while the Christian army was slowly treading its way through the narrow valley of Roncevaux or Roncesvalles (q.v.), that Roland, commander of the Marches of Bretagne, who commanded the rear-guard, was suddenly attacked by a large body of Vascons, lying in ambush in the surrounding woods, and slain while fighting gallantly. Beyond these meagre details, all that we read of R. is traditional. The oldest version of the *Song of Roland*, forming part of the *Chansons de Geste*, which treat of the achievements of Charlemagne and his paladins, belongs to the 11th c., though the original compositions are probably not much later than the period to which they refer. Throughout the middle ages, the *Song of Roland* was the most popular of the many heroic poems current, and William of Normandy, on his way to conquer England, had it sung at the head of his troops, to encourage them on their

march. At the present day, the traditionary memory of the heroic paladin is held in honor by the mountaineers of the Pyrenees, among whose dangerous defiles the scene of his exploits and death is laid.

According to the poem, Charlemagne had been six years in Spain, when, resolving to return to France, he, by the advice of R., sent his capt., Ganelon, on an embassy to the pagan king, Marsilius of Saragossa, to receive the homage which that king had pledged. The mission was a dangerous one, as all other ambassadors to the king had been slain, and Ganelon, wishing to revenge himself on R., perfidiously betrayed to Marsilius the route which the Christian army was to take. The consequence was, that after Charlemagne had safely crossed the mountains with the main part of his forces, R., who commanded a rear-guard of 20,000 men, was surprised within the narrow valley of Roncesvalles, by a terrible army of all the pagan nations of the world. R., who possessed an enchanted horn, which could have been heard far beyond the mountains, might have recalled his uncle, but, despising such pusillanimity, he fought on till 100,000 Saracens lay slain around him and the 50 warriors who alone remained alive to aid him. Another army of 50,000 men of Carthage, Ethiopia, and Candia now pours down upon him. At length he blows his horn, which is heard by Charlemagne, who, however, does not return, as Ganelon persuades him once, twice, and thrice that R. is only hunting the deer; and not until the veins of R.'s neck have burst with the violence of the blast, does the emperor retrace his steps. In the meanwhile, R. has dragged his dying limbs to the foot of Mount Cisaire, above Roncesvalles, where, after having sung his death-song and thrown his trusty and enchanted sword Durandal into a poisoned stream, where it stills remains, he dies exhausted from his many wounds. Charlemagne, who arrives too late to save him, avenges his death in a series of marvellous battles and bloody victories.—The 83d impression of Léon Gautier's edition of the *Chanson de R.* appeared 1881. See Bartsch, *Das Rolandslied* (1874).

Ro'LAND FOR AN OLIVER, blow for blow: said of antagonists who prove themselves equal to each other in every point of combat, after the manner of *Roland* and *Oliver*, who, according to the legend, fought for five consecutive days on an island in the Rhine without either getting the least advantage of his adversary.

ROLAND, *ro-lŏng'*, MANON JEANNE (PHLIPON), Madame: 1754, Mar. 17—1793, Nov. 8; b. Paris; wife of Jean Marie R. The precocity of her intelligence was remarkable At the age of four, she had a passion for reading; at seven, she learned by heart a treatise on heraldry; at eight, she used to carry Plutarch with her to church, while the *Jerusalem Delivered* of Tasso, and the *Télémaque* of Fénelon, fired her childish imagination. At the same time, an ardent piety began to develop itself, and, when only 11, she entered the *Maison des Dames de la Congrégation*, in the Faubourg Saint-Marcel. Here she formed close friendship with two young girls from Amiens, Henriette and Sophie

Cannet, particularly with the latter, which was fruitful in consequences. On her return to her father's house after the lapse of two years, a change ensued: she no longer cared for the so-called 'religious' writers—the defenders of the creeds and the church. Her faith was slowly changing from the dogmatic creed of Bossuet to the 'naturalism' of the Encyclopédists and 'Philosophes.' In ethics, now as ever, her preference for the stoical system was marked. Shortly after the death of her mother, 1773, she read for the first time *La Nouvelle Heloïse*, which seemed to her (as it has to many another young impassioned soul) a veritable revelation. At the age of 25 (1780, Feb. 4) she was married to Roland (q.v.). Her influence quickened and heightened his revolutionary zeal. She was a bold thinker and a brilliant writer, and her political contributions to periodicals, often under her husband's name, commanded wide attention. After their removal to Paris (1791, Jan.), Madame R.'s salon soon became the centre for the republican leaders. Thenceforward her career was identical with her husband's until his flight from Paris, 1793, May 31. The same night, she was herself arrested, and imprisoned in the Abbaye. A more dauntless and intrepid spirit never entered its walls. Released June 24, she was instantly rearrested by the very commissaries who had set her at liberty, without the shadow of a tangible accusation, and confined in Sainte-Pélagie. Madame R. spent the period of her imprisonment in study, in the composition of her political *Mémoires*. Summoned before the Revolutionary Tribunal in the beginning of Nov., she was condemned, and on the 8th was guillotined, amid the shoutings of an insensate mob. It is said that while standing on the scaffold, she asked for a pen and paper that she might 'write down the strange thoughts that were passing through her head.' Only a genuine child of the French republic could have been so ostentatiously speculative at such a moment. Still more celebrated is her apostrophe to the statue of Liberty, at the foot of which the scaffold was erected: 'O Liberty, what crimes are committed in thy name!' or, according to another version: 'Liberty, how they have played with thy name!'—See *La Correspondance de Madame Roland avec les Demoiselles Cannet* (2 vols. Paris 1841); *Lettres Autographes de Madame Roland, adressées à Bancal des Issarts* (Paris 1835).

ROLAND (DE LA PLATIÈRE), *ro-lŏng' dĕh lâ plâ-te-ăr'*, Jean Marie: French minister of the revolutionary period. 1734, Feb. 18—1793, Nov. 15; b. Mizy, near Villefranche (Beaujolais). His first independent appointment was that of inspector-ordinary at Amiens. In 1775 he met Manon Jeanne Phlipon, a young woman of brilliant genius and fascinating manners, and, after a courtship of four years, they were married, 1780, Feb. 4. When the Revolution broke out, 1789, R. and his wife became decided partizans of the movement. In 1791 he was sent to Paris, by the municipality of Lyon, to represent to the Constituent Assembly the deplorable condition of the Lyonnese weavers. After the dissolution of the Constituent Assembly, he

founded at Lyon the *Club Central,* the members of which, marked by their attachment to constitutional liberty, received the name of *Rolandins.* Toward the close of 1791, he fixed himself at Paris, and soon became one of the heads of the Girondist or moderate section of the republicans. March, 1792, he was appointed minister of the interior, but resigned Jan., 1793, despairing of seeing moderate counsels adopted. After placing his accounts in the hands of the Assembly, he asked permission to withdraw from Paris, but it was refused, and an illegal attempt was made to arrest him, which failed. Immediately afterward he fled, and concealed himself in Rouen. When news reached him of the beheading of his wife, he wandered some miles to a small village in the environs of Rouen, and there, maddened with grief and despair, committed suicide. Roland wrote and published several memoirs and disquisitions on branches of industry, besides 6 vols. of *Letters* addressed to his wife before their marriage, from Switzerland, Italy, Sicily, and Malta.

RÔLE, n. *rōl* [F. *rôle,* a roll, a scroll—from L. *rotŭla,* a little wheel; *rota,* a wheel]: a part or character in a play or other public performance.

ROLFE, *rŏlf,* WILLIAM JAMES, A.M., LITT.D.: American Shakespearian scholar: b. Newburyport, Mass., Dec. 10, 1827. He was educated at Amherst College, and after teaching in Wrentham, Mass., became master of the high school, Dorchester, Mass., in 1852. In 1857 he was master of the high school at Lawrence, Mass., in 1861 of the high school at Salem, Mass., and from 1866 to 1868 of the high school at Cambridge, Mass., resigning in the year last named to devote himself to literary pursuits. His Shakespearian labors began in 1867 with his editorship (with J. H. Hanson) of Craik's *English of Shakespeare.* In 1870 he issued an annotated edition of *The Merchant of Venice* and followed this with other annotated plays till in 1883 a complete edition of Shakespeare had appeared in 40 volumes. This is sometimes styled *The Friendly Edition,* a name first suggested by Mary Cowden-Clarke. He has also edited *Select Poems of Goldsmith* (1875); Gray (1876); Browning (1887); and Wordsworth (1889); a complete edition of Scott (1887); and of Tennyson (1895-8), and other works, and is the author of *Satchel Guide to Europe,* revised yearly (1872-1903); *Shakespeare the Boy* (1896); *Life of Shakespeare* (1902). He has lectured much upon Shakespeare and literature in general and in his editions of Shakespeare and other poets has admirably preserved the balance between textual and litrary criticism.

ROLL, v. *rōl* [OF. *roler;* F. *rouler;* mid. L. *rotŭlārĕ,* to roll—from L. *rota,* a wheel: It. *rotolare;* Dut. and Ger. *rollen;* Icel. *rulla;* Dan. *rulle,* to roll]: to move by turning over and over; to move round, as a wheel; to revolve; to cause to revolve; to involve; to form or be

formed into a round mass; to wrap round itself; to spread or flatten by means of a roller or cylinder; to drive with a circular motion, or forward, as in a stream; to perform a periodical revolution; to move, as waves; to sound as a drum, the strokes producing a continuation of sounds; to be tossed about, or to move from side to side, on rough water, as a ship; to run on wheels; to move tumultuously: N. act of rolling; state of being rolled; thing rolling; mass made round [F. *rouleau*]; writing or paper rolled upon itself; anything wound into a cylindrical form; twist of tobacco; small piece of baked bread: in *arch.*, a round molding—sometimes modified by introduction of a fillet, and then called the roll-and-fillet molding: *anciently*, a volume; public document; register or catalogue; chronicle. ROLL'ING, imp.: ADJ. revolving; movable: N. motion of a ship from side to side. ROLLED, pp. *rōld*. ROLLER, n. *rōl'ėr*, long round body of wood, stone, or iron, used to press, crush, grind, or smooth: in *surg.*, long broad bandage of cotton or linen: in *agri.* (see below): in *printing* (see below). ROLL'ERS, n. plu. *-ėrz*, tumbling heavy waves of a ground swell; huge rolling waves. LONG-ROLL, in *mil.*, prolonged roll of the drums, as the signal for an attack, or for troops to fall into line. ROLLING-CHOCKS, n. *rōl'ĭng-chŏks*, or ROLLING-CLEATS, n. *-klēts*, in *naut.*, jaws on a yard to steady it against the mast when a ship rolls. ROLLING-MILL, heavy steel rollers for reducing red-hot masses of iron, copper, etc., to bars or thin plates, or sheets (see IRON). ROLLING-PIN, round piece of wood for pressing and shaping dough or paste. ROLLING PRAIRIE, undulating prairie-land in N. Amer. ROLLING-PRESS, press consisting of two rollers. ROLLING STOCK, locomotives, carriages, and wagons belonging to a railroad company. ROLLS, n. plu. *rōlz*, a part of London between the City and Westminster, enjoying certain liberties, so called from the court *rolls* or law records formerly deposited in its chapel: office where the Brit. chancery records are kept, hence 'the master of the rolls'—that is, 'the judge of the court' (see MASTER OF THE ROLLS). ROLLS OF COURT or OF PARLIAMENT, etc., the parchments, etc., on which the list of causes depending, or of the acts and proceedings, is engrossed. TO CALL THE ROLL, to recite a list or register of the names of persons, as of a school, college, or of any organized body of persons, to ascertain their presence or absence. ROLLER-SKATES, wooden bases or soles for the boots under which are small movable wheels for skating on smooth level surfaces not formed of ice.—SYN. of 'roll, n.': catalogue; list; schedule; inventory; register.

ROLL, *rōl*, ALFRED PHILIPPE: French painter: b. Paris, March 10, 1847. From being a designer of patterns and decorations of various sorts he passed to the Ecole des Beaux Arts at Paris, where he was much at-

tracted to the work of Jerome and Bonnat. The influence of both these teachers is traceable in his pictures, especially that of Bonnat in the duskiness of coloring which prevails in his *Scenes from the Flood at Toulouse in June 1877*, a picture which gained a medal of the first class, and is now in the Havre Museum. In succeeding pictures he developed a passion for naturalism of the most uncompromising character, and in his *Feast of Silenus* (1878) (in the Museum of Ghent), and still more in the *Strike of the Colliers* (1880), now in the gallery of Valenciennes, and *Labor* (a representation of masons, bricklayers, and carpenters at work on a building), this tendency is conspicuous. These are all blazing sunlight pictures, as if executed *en plein air*, and in like style are his subsequent works whether portraits, genre-groups, landscapes, or marines. They are solidly painted with a matter-of-fact air of reality which is very striking. Among his later works is a canvas crowded with figures, *The Centennial Jubilee of the Revolution of 1789*.

ROLL'ER: agricultural implement, long in use, consisting of a cylinder of wood, stone, or iron, placed in a frame, so as to revolve like a wheel, and drawn over the land by a horse. The weight of the roller is greater or less according to the purpose for which it is intended: the breaking of stiff clay clods, the consolidating of very light soils after frost, the hardening of the surface of the ground to check evaporation, the leveling of an uneven surface before harvest operations, etc. The introduction of hollow cylinders of iron, instead of solid ones of wood or stone, was the first improvement on the old simple implement; which was afterward further modified by dividing the cylinder into two parts, to give greater facility in turning, and to diminish its injurious action in scraping the soil before it while turning; and this process of division being carried further, with other modifications, giving each part or wheel a more independent action, and breaking up the uniformity of surface by giving a raised wedge-like edge to the circumference of each wheel, the result is a *clod-crusher*.

ROLL'ER: part of the inking apparatus in letter-press printing; of modern invention. In the old process of applying ink to the surface of types, stuffed leather balls or cushions were used, inapplicable to cylinder-printing. The first improvement on the stuffed balls consisted in covering them with a soft and elastic composition. Catching at this idea, the inventors of cylinder-printing machines made rollers by coating longitudinal and rounded pieces of wood with the composition, by means of casting in a mold. This invention came generally into use 1814-18, rendering printing machinery practicable.

A roller may be of any length, to suit work of different kinds; for hand-presses it is usually about 30 in. long, but longer for machines, according to their dimensions.

The thickness is about 3 inches, of which the composition on the wood is probably three-quarters of an inch all round. The composition now used is of glucose (with a little glue) and glycerine in about equal parts, somewhat resembling soft India-rubber. In summer, it is necessary to use a somewhat larger proportion of glucose than in winter, to secure suitable firmness. Rollers, in time, shrivel and become hard by use, and the composition may then be remelted, with some small addition of new materials. In all cases, the rollers require to be kept very clean, and suspended in a rack when not in use.

ROLL'ER (*Coracias*): genus of birds long generally referred to the Crow family (*Corvidæ*), but by many recent naturalists to the Bee-eater family (*Meropidæ*), and to the King-fishers, with which they regard the habits and colors of the species as indicating a closer alliance. The bill is moderately large, compressed toward the point, straight, the upper mandible curved downward at the point, the sides bristled at the base, the gape wide; the legs short and strong; the wings long. The colors are in general very brilliant. Swainson says of the BLUE-BODIED R. (*C. cyanogaster*) of w. Africa, that 'no effort of art can possibly do justice to those inimitably rich lines of ultramarine, beryl color, and changeable fawn, with which it is ornamented; for there are no tints

Roller (*Coracias garrula*).

hitherto discovered, either mineral or vegetable, which will enable the painter to produce their successful imitation.' The species are numerous, all natives of the old world, and mostly of the warmer parts of it. One only is found in Europe, the COMMON R. (*C. garrula*), a bird nearly equal in size to a jay; with head, neck, and wing-coverts greenish blue, other shades of blue strongly marked in the wings. This bird is abundant in n. Africa and in w. Asia; it is partially migratory, and is rare in Britain. It tosses its food, which consists of insects or parts of plants, into the air before eating it, swallowing it when it falls in a proper direction for entering the throat. The name R. is derived from its habit of rolling or tumbling in the air like a tumbler-pigeon. It is an inhabitant of woods. It is very shy, and the sportsman always finds it difficult of approach. In countries where it abounds, as in some islands of the Mediterranean, it is in high esteem for the table.

ROLLIC, or Rollick, v. *rŏl′lĭk* [Scot. *rollochin*, lively, free-spoken: prov. Eng. *rallack*, to romp: Sw. *rolig*, merry: Gael. *roilig*, a frolicsome person]: to move or act with a careless swaggering air. Rol′licking, imp.: Adj. rudely boisterous in merriment; careless; swaggering. Rol′licked, pp. *-lĭkt.*

ROLLIN, *rŏl′ĭn*, F. *rol-lăng′*, Charles: French historian: 1661, Jan. 30—1741, Dec. 14; b. Paris. He studied at the Collége du Plessis, where, 1687, he became prof. of rhetoric. In 1688 he was called to the chair of eloquence at the Collége Royal de France; 1694 he was chosen rector of the Univ. of Paris, signalizing his brief tenure of two years by many reforms—e.g., his revival of the study of Greek, then falling into neglect. In 1699 he was appointed coadjutor to the principal of the College of Beauvais; but was removed 1712, through the machinations of the Jesuits, for R. was a strenuous Jansenist. In 1720 he was re-elected rector of the univ.; and 1726 published his *Traité des Études*, which Villemain has pronounced 'a monument of good sense and taste,' and which is his best literary performance. His *Histoire Ancienne* (Paris 12 vols. 1730–38), for several generations prodigiously popular, and translated into English and other languages, is feeble in its philosophy, jejune in its criticism, and often inaccurate in its narrative. Nevertheless, to multitudes, both in Europe and America, it has well served as an introduction to the study of ancient history.

ROLLIN, Ledru: see Ledru-Rollin.

ROLLOCKS, *rŏl′lŏks*, for Rowlocks: see under Row 1.

ROLL OF ARMS: heraldic record of arms, either verbally blazoned, or illuminated, or both, on a long strip of vellum, rolled up, instead of being folded into leaves. Rolls of arms are the most important and most authentic materials for the history of early heraldry. In England, they go back to the reign of Henry III., the oldest being a copy of a roll of that reign, containing a list of the arms borne by the sovereign, the princes of the blood, and the principal barons and knights, 1216–72, verbally blazoned without drawings. The original has been lost; but the copy (1586), called 'Glover's Roll,' is in the English College of Arms. The *Roll of Caerlaverock* is a heraldic poem in Norman-French, reciting the names and arms of the knights at the siege of Caerlaverock, 1300.

ROLY-POLY, or Rolly-poly, n. *rōl′ĭ-pōl′ĭ* [said to be a compound of *roll*, and *pool*, a hollow]: a game in which a ball rolling into a certain hollow place wins; a pudding formed of a sheet of paste on which a conserve of fruit is spread, then rolled up and cooked.

ROMAGE, n. *rŏm′āj* [see Rummage]: in *OE.*, active and tumultuous search for; disturbance; tumult.

ROMAGN′A: see Papal States

ROMAIC, n. *rō-mā'ĭk* [F. *Romaïque:* mod. Gr. *Romāĭkos*]: a term applied to the modern Greek tongue: ADJ. of or relating to modern Greece, or its language.

ROMAINE, *ro-mān'*, WILLIAM: clergyman of the Church of England, noted for the ardor with which he preached 'evangelical' and Calvinistic doctrines in an age of religious apathy: 1714, Sep. 25—1795, July 26; b. Hartlepool; son of a French Prot. refugee. R. was ordained a priest in the Church of England 1738, and immediately obtained a curacy near Epsom. In 1739 he published a sermon preached before the Univ. of Oxford, which led to a controversy with Bp. Warburton. In 1748 he was chosen lecturer of St. Botolph's in London, and in the following year lecturer of St. Dunstan's-in-the-West. Two years later, he was appointed assistant morning-preacher at St. George's; but was afterward deprived of the situation by the rector, Dr. Trebeck, who was jealous of his popularity, and averse to the 'plainness' of his preaching. His 'evangelicalism' grew with his years; and at length, 1757, in a sermon on *The Lord Our Righteousness,* it became so offensive to the torpid dons of Oxford that the univ. pulpit was closed against him. In 1756 he became curate and morning-preacher at St. Olave's, Southwark, a situation which he exchanged in the course of a year for a preachership at St. Bartholomew the Great, near West Smithfield. In 1766 he was chosen by the parishioners rector of St. Andrew, Wardrobe, and St. Anne, Blackfriars, an office which he held till his death. R. published: *Twelve Sermons upon Solomon's Song* (1759); *Twelve Discourses upon the Law and the Gospel* (1760); *The Life of Faith* (1763); *The Scripture Doctrine of the Sacrament of the Lord's Supper* (1765); *The Walk of Faith* (1771); *An Essay on Psalmody* (1775); *The Triumph of Faith* (1795). His works were republished in a collected form, 8 vols., 1796.

ROMAN, a. *rō'man* [L. *Romānus*, a Roman—from *Roma*, Rome]: pertaining to Rome (q.v.) or its people; pertaining to the pope; papal; the type commonly used in printing, as distinguished from the Italic: N. a native or citizen of Rome. ROMANESE, n. *rō-man-ēz'*, language of the Walachians, spoken in Walachia, Moldavia, and parts of Hungary. ROMANZA, n. *rō-măntz'a* [It.]: in *mus.*, a romance. ROMANZIERI, n. *rō-măntz-ĭ-ā'rē* [It. romancists]: a school of Italian poets, who took for their subjects the romances of France and Spain, especially those relating to Charlemagne and his knights. Aristo is the chief poet of the school. ROMANIC, a. *rō-măn'ĭk*, derived from the Roman alphabet. ROMANISM, n. *rō'man-ĭzm*, the tenets of the Church of Rome (see ROMAN CATHOLIC CHURCH). RO'MANIST, n. *-ĭst*, adherent of the Church of Rome. RO'MANIZE, v. *-īz*, to convert or to conform to the Rom. Cath. religion; to Latinize. RO'MANIZING, imp.: ADJ. tending or leading toward the Church of Rome. RO'MANIZED, pp. *-īzd:* ADJ. inclined toward the Roman language, or to the Church of Rome. ROMAN CATHOLIC, a. applied to that form of the Christian religion of which the pope, the bishop of Rome, is the acknowledged chief or head: N. one who professes that form of Christianity (see ROMAN CATHOLIC CHURCH). ROMAN CATHOLICISM, *ka-thŏl'ĭ-sĭzm*, the doctrines and practices of the Rom. Cath. Chh. ROMAN CEMENT, cement or mortar, formed from an argillaceous carbonate of lime calcined, used in the surface-fronting of brick and other buildings to imitate stone, which art was brought from Italy; a hydraulic cement (see CEMENT). ROMAN CANDLE, a firework in form of a large candle which throws up colored balls. ROMAN INDICTION: see INDICTION. ROMAN LAW, name given to the body of laws founded on the laws and statutes of anc. Rome, and incorporated more or less into the laws of every country of Europe, and into laws in the United States (see Law [Established Rule]—References). ROMAN-OCHRE, n. *-ō'kẽr*, a pigment of rich, deep, and powerful orange-yellow color, transparent and durable. It is used, both raw and burnt, in oil and water-color painting. The coloring matter is oxide of iron mixed with earthy matter. ROMAN ORDER, in *arch.*, the Composite order. ROMAN SCHOOL, n. in *art*, the style formed or prevalent at Rome in the beginning of the 16th century; remarkable for its solid and legitimate effects. The works of Raphael exhibit this school in its full development, and he is accordingly considered its head. ROME NOT BUILT IN A DAY, great achievements or undertakings can only be accomplished by patience and perseverance.

RO'MAN AL'UM. See ROCHE ALUM (under ROCHE).

ROMAN ART AND ARCHITECTURE: the Romans used a mixed architectural style, being an extension of the Etruscan methods of building combined with the forms used by the Greeks and other nations. The Etruscans, while not possessiong the gift of rising to the ideal,

showed great inventive genius together with a passion for rich adornment. While no Etruscan temples remain to us, many tombs and walls have survived which strongly resemble the architecture of the Mycenæan Age of Greece. There is the same polygonal masonry, the same construction of gates and vaulted roofs. However, the construction of the true arch of wedge shaped stones is found in common use first in Italy and is probably due to the Etruscans. The earliest use of the arch at Rome is seen in the construction of the sewers, the oldest of which date from the 7th or 6th century B.C. With the conquest of Greece in the middle of the second century B.C., the Romans became acquainted with the art of that country, but the use of the arch was continued in all its vigor and was further developed and completed by the invention of the cross arch or groined vault and the dome. With these elements the Romans combined the columns and decorations of the Greek orders. Besides, Rome, under the empire, was the capital of the world and attracted artists from every land. The result was that the architects of Rome borrowed from many sources, and everything that was imported partook of the character of the importers. While being thus a mixture and amalgamation of all ancient styles, Roman architecture is at the same time the starting point for all modern styles. It is thus the connecting link between ancient

Fig. 1.—Doric Arcade, Roman Style.

and modern art; the whole history of Roman architecture being that of a transition, slow but steady, from the external architecture of the Greeks to the internal architecture of the Christians. Rome borrowed from Greece the oblong peristylar temple, with its horizontal construction and decoration, and the various 'orders.' From the Etruscans was derived not only the arch, as mentioned above, but also the circular form of temple, which

Fig. 3. The Roman Forum and the Palàtine Hill. (Three Columns of the Temple of Castor and Pollux are seen on the left.)

Fig. 4. Tomb of Caecilia Metella.

became a leading feature in the development of the future Roman style.

The Orders imported from Greece were the Doric, Ionic, and Corinthian. These were all used in Rome, but with some modifications; the Doric, e.g., being never used as in Greece, but without fluting, and with the capital and entablature altered, and a base added, so as to make the style more similar to the others, with which it was often associated. This is distinctly seen in the illustration of a Doric arcade in Roman style.

The Ionic had the volutes turned out angularwise, so as to present a similar face in each direction. The members of the base lose in strength and energy and the cornice is reduced in height. The favorite 'order' of the Romans, however, was the Corinthian. It was invented in Greece, but more fully developed in Rome, where it suited the desire for richness and luxuriance in architecture. Many fine examples of this style exist in Rome (as the Pantheon), and in the provinces (as in Maison Carree at Nimes, Baalbek, etc.), the capitals, wherever found, being designed in endless variety. The Composite order was an invention of the Romans and is sometimes called the Roman order; it is a combination of the Ionic and Corinthian. All these orders were used by the Romans, but in a manner peculiar to themselves; they combined with the Greek orders the arch. They placed the columns (fig. 1) at wide intervals, and set them on pedestals, to give them and the entablature a proper proportion; while behind the columns they placed

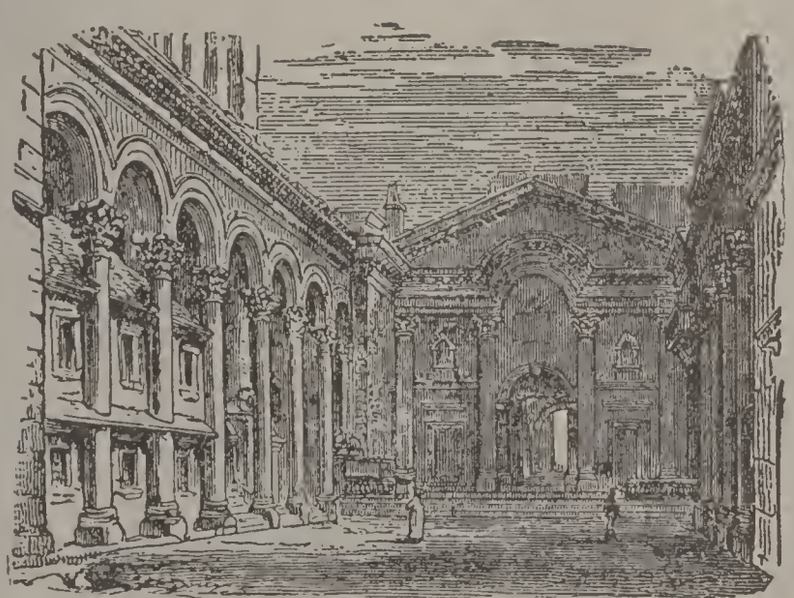


Fig. 2.—Court-yard at Spalatro.
(From Sir Gardner Wilkinson's *Dalmatia.*)

square piers, and from them threw arches which supported the wall. This was the favorite Roman style, and may be seen in all their important works (amphitheatres, arches, baths, etc.). They piled one order above another, marking each story with the entablature. As the

style proceeded, vaulting and arching became more common, especially in internal construction, but the horizontal ornamentation was never entirely abandoned. Arches of this construction were thrown from pillar to pillar behind the entablature, and gradually the pier was omitted, and the arch openly thrown from pillar to pillar, the architrave bent round it, and the cornice continued horizontally above.

The buildings erected by the Romans are very varied in their character, but the same style was used for temples, baths, amphitheatres, triumphal arches, tombs, etc. Among the earliest temples of which remains now exist are those of Castor and Pollux in the Forum Romanum and the Temple of Mars Ultor in the Forum of Augustus. The former was built, according to tradition, in 484 B.C. and completely rebuilt by Tiberius and dedicated in 6 A.D. The temple of Mars Ultor, one of the most magnificent in Rome, was octo-style and peripteral except at one end where it joined the forum wall. Of each of these buildings three columns and a portion of the entablature are still standing. One of the most interesting temples of Rome is the Pantheon. The portico is of the age of Augustus, but the rotunda is probably considerably later. The dome of the interior is a splendid example of the progress of Roman architecture in developing the use of the arch, and transferring the decoration from the exterior to the interior. The former is in this case totally sacrificed to the latter; but the interior has not yet been surpassed for boldness of construction or simplicity and sublimity of effect. Other examples of circular temples, on a small scale are found at Tivoli and in Rome, the former known as the Temple of the Sibyl and the latter dedicated to Vesta.

The greatest works of the Romans, however, were not their temples. The basilicas, amphitheatres, and baths are far more numerous and more stupendous as works of art, and all show how well the Romans had succeeded in producing an internal architecture, which at a later period became useful as a model for Christian buildings. After the time of Constantine the Great, of whose great basilica with its nave and two aisles magnificent ruins still remain, many basilicas were turned into Christian churches and many churches were built upon the same plan. A conspicuous example is the Basilica of St. Peter, erected during the reign of this emperor. The Roman amphitheatres have never been surpassed in size and grandeur or for suitability to their purpose. And of the baths sufficient remains are left, though much decayed, from the perishable nature of the brick and stucco employed in their construction, to prove that the scarcely credible descriptions of contemporaries were surpassed by the magnificence of the buildings themselves.

Among other varied public works of the Romans are their aqueducts and bridges, triumphal arches, pillars

of victory and tombs. Of the tombs of the Romans, the earliest and best specimen is that of Cæcilia Metella (wife of Crassus, one of Cæsar's lieutenants), on the Appian Way (fig. 4). It consists (like most Roman tombs) of a round drum on a square basement, and was probably surmounted by a conical roof. The tomb of Augustus was similar, on a very large scale, and the sloping roof was broken into terraces planted with trees. The tomb of Hadrian (now the castle of San Angelo in Rome) is another enormous example. The tombs were generally ranged along the ways leading to the gates of the cities.

The earliest houses of the Romans were probably mere huts of osiers daubed with mud, and even as late as the last century of the Republic the houses of the richest citizens were small and built of sunburned brick or soft tufa. No examples of fired bricks are known in Roman buildings till the time of Julius Cæsar. After the conquests in the East, when the Romans had acquired wealth and a love of luxury, houses of great size and splendor began to be erected, adorned with marble columns, paintings, statues, and costly works of art. The wonderfully preserved remains of houses in Herculaneum and Pompeii have made us very familiar with the usual arrangement of the interior. The most important parts of a house were (1) Vestibulum, (2) Ostium, (3) Atrium, (4) Alæ, (5) Tablinum, (6) Andron, (7) Peristylium. The front of the city house was directly on the street, there being no intervening lawn, and the front rooms were usually rented for shops or other business purposes. Between these was the *vestibulum* or small covered space before the front door. The door opened upon the *ostium* or hall leading to the *atrium*, the principal room of the house. In the center of the atrium was the *compluvium* or cistern, into which the water ran from the square opening in the roof above it. This opening, known as the *impluvium*, was the chief source of air and light, as there were no windows downstairs. The further end of the *atrium* widened into two recesses called *alæ*, one of which was the repository of the family archives. Directly back of the *atrium* was the master's room, called the *tablinum*. This could be shut off from the *atrium* by curtains. On one side of the *ablinum* was the *andron*, a passage-way leading to the rear of the house. The *tablinum* opened upon the *peristylium*, an open court surrounded by a colonnade with a garden in the center. This was the pleasantest part of the house and came to be used more and more for family purposes as the front areas were devoted more and more to social and public functions. Other rooms in the plan that are not lettered were devoted to sleeping chambers and other domestic uses. Among the rooms about the *peristylium* were one or more dining rooms, servants' quarters, and a kitchen. For a warm climate the Roman house was in many respects delightful.

ROMAN CATHOLIC CHURCH: community of Christians throughout the world who recognize the spiritual supremacy of the pope or bishop of Rome, and are united together by the profession of the same faith, and the participation of the same sacraments. The subject may be conveniently treated by considering under separate heads the history of this great Christian community; its doctrinal and disciplinary system; and finally, its organization and constitutional forms, especially as affected by the decrees of the late council of the Vatican, and by other doctrinal constitutions of recent years.

Although a few other points of doctrinal difference separate the Roman Church from the Greek, Russian, and oriental communions, yet the most palpable ground of division lies in the claim of supremacy in spiritual jurisdiction on the part of the Roman bishop. The history of the Roman Church, therefore, in relation to the ancient oriental churches, is, in fact, the history of this claim to supremacy. In the minds of Roman Catholics, the claim of supremacy on the part of the bishop of Rome rests on the belief that Christ conferred on the apostle Peter a 'primacy of jurisdiction;' that Peter fixed his see and died at Rome (a position which many Prot. historians have called in question); and thus, that the bishops of Rome, as successors of the apostle Peter, have succeeded to his prerogatives of supremacy. In this light, Rom. Cath. historians read the facts of the early history of the church—and they trace to this acknowledgment of the superiority of that see, the numerous references to Rome on matters of doctrine or discipline; the appeals from other churches, even those of Alexandria, Antioch, and Constantinople; the depositions or nominations of bishops, examination and condemnation of heresies—of which the first five centuries, especially the 4th and 5th, present examples, but in which Prot. historians recognize only the natural result of the political and social superiority of Rome as capital of the Roman empire. The letters of Pope Leo the Great show beyond question that the bishops of Rome, in the commencement of the 5th c., claimed to speak and act with supreme authority; and the first direct challenge to this claim was made by the patriarch of Constantinople, Acacius, and led to a schism of many years, which, however, terminated in the humiliation of the younger see. In all the controversies on the Incarnation—the Arian, the Nestorian, the Eutychian, the Monothelite—not only was the orthodoxy of Rome never impeached, but she even supplied at every crisis a rallying-point for the orthodox of every church. It was so, again, in the Iconoclast controversy; and though Constantinople, in the time of Gregory the Great and again of Nicholas I., renewed the struggle for supremacy, or even equality, the superior position of Rome continued to be recognized. The separation of the Greek Church and her dependencies, under the patriarch Michael Cerularius, 1054, was but a narrowing of the territorial jurisdiction of Rome; and within that portion of the church which remained faithful, it even enhanced her dignity, and widened her prerogatives. The abandon-

ment of Italy by the emperors to its fate, under the invasion of the barbarians, led to the establishment of the temporal sovereignty of the popes; and the social disorganization of Europe combined with the spiritual authority of the Roman bishop to establish the general recognition of his authority throughout the kingdoms of Europe as an arbiter in the temporal relations of sovereigns with their subjects, and of sovereigns toward each other. This extraordinary temporal authority was at once the consequence and the support of his acknowledged spiritual power; and even Protestants have recognized the Rom. Church of the mediæval period as absorbing in itself almost the whole of European Christendom, and as the only public (even though they believe it degenerate and corrupt) representative of the church in the West. The temporary withdrawal of the papal residence from Rome to Avignon brought notable diminution, at least, of the temporal power of the popes, which was still further weakened by the long western schism, by the conflicts of the rival pontiffs, and the scandals which arose therefrom. The modern political institutions which then began to break forth upon the world so modified the public relations of church and state, as by degrees to undo the condition of society in which the temporal power of the popes had its foundation. The great revolution of the 16th c. completed the process.

The revolution with which the popes thus found themselves face to face was not without its influence in the external history of the Roman Church. The defections consequent on the Reformation, at first numerous and formidable, received a check. The great Council of Trent did more to systematize, to define, and to present in popular form the doctrinal belief of Rome, than had been accomplished by the united efforts of the schoolmen of the three centuries which preceded the Reformation; while the decrees of reform which it enacted, and still more the schemes of local and individual reform which it originated, and to which it gave impulse as well as example, tended to bring about an active internal reform. The latter half of the 16th c. was a period of new life in the Roman Church. The celebration of local synods, the establishment of episcopal seminaries, the organization of schools, and other provision for religious instruction—above all, the foundation of various institutions for clerical education—had the effect of arresting the progress of Protestantism, which in many countries had been at first rapid and decisive; and Lord Macaulay has traced with curious minuteness the line which marks in the several kingdoms the origin and the progress of this religious reaction.

From the end of the 16th c., therefore, the position of the Rom. Cath. Church, especially in her external relations, may be regarded as settled. The local distribution of the rival churches in the world has hardly been altered, except by migration, since that time. But in her relations to the state, the Roman Church has since passed through a long and critical struggle: see GALLICAN CHURCH: FEBRONIANISM: INNOCENT XI: ETC. The new theories to which the

French Revolution gave currency have still further modified these relations; but in most of the European kingdoms they were readjusted after 1815, either by concordat or some similar agreement. Many conflicting claims on either side, however, still exist; but in the conflict with the state, the policy of the Rom. Cath. Church has generally been to record her protest against any violation of her right, and, this protest having been made, to submit under protest, unless in what are considered the essentials of faith or of discipline. Where the encroachments of the state are considered to violate the essentials of faith or discipline, the resistance must result in definitive separation, as in the case of England under Henry VIII. and his successors, and of Poland under the czar.

The details of the doctrinal system of the Rom. Cath. Church may be best collected and explained from her latest authentic creed, commonly called 'the creed of Pius V.,' drawn up as a summary of the authoritative teaching of that ecclesiastical body till the time at which it was written, and published together with certain later doctrinal pronouncements. It is necessary only to premise that, while in the view of Rom. Catholics (see RULE OF FAITH) all doctrine must be based on the word of God, written or unwritten, the church is the only authoritative judge of that rule of faith. For the tribunals which are held to represent this teaching, as well as the subjects to which the privilege extends, and the limits within which it is held to be exercised infallibly, see INFALLIBILITY. But Rom. Catholics hold, that while the church has authority, when doubts or difficulties arise, to propound, in such terms as leave no room for doubt, new definitions of faith, nevertheless these new definitions must not be regarded as additions to the accepted faith of the church, or indeed to the original deposit of Divine teaching, but only as expositions of former articles, or at most as developments of what already existed in the germ and has but been evolved by controversy, or brought into practical action by the progress of time and by the change of the external relations of the church. The creed of Pius V. is as follows:

'I, N. N., with a firm faith believe and profess all and every one of those things which are contained in that creed which the holy Roman Church maketh use of. To wit: I believe in one God, the Father Almighty, Maker of heaven and earth, of all things visible and invisible. And in one Lord Jesus Christ, the only begotten Son of God, born of the Father before all ages; God of God; Light of Light; true God of the true God; begotten, not made; consubstantial with the Father, by whom all things were made. Who for us men, and for our salvation, came down from heaven, and was incarnate by the Holy Ghost of the Virgin Mary, and was made man. He was crucified also for us under Pontius Pilate, suffered, and was buried. And the third day he rose again according to the Scriptures: he ascended into heaven, sitteth at the right hand of the Father, and shall come again with glory to judge the living and the dead; of whose kingdom

there shall be no end. I believe in the Holy Ghost, the Lord and life-giver, who proceedeth from the Father and the Son; who, together with the Father and the Son, is adored and glorified; who spake by the prophets. And in one holy, Catholic, and Apostolic Church. I confess one baptism for the remission of sins; and I look for the resurrection of the dead, and the life of the world to come. Amen.

'I most steadfastly admit and embrace the apostolical and ecclesiastical traditions, and all other observances and constitutions of the same church.

'I also admit the holy Scriptures, according to that sense which our holy mother the Church hath held and doth hold; to whom it belongeth to judge of the true sense and interpretation of the Scriptures; neither will I ever take and interpret them otherwise than according to the unanimous consent of the Fathers.

'I also profess that there are truly and properly seven sacraments of the new law, instituted by Jesus Christ, our Lord, and necessary for the salvation of mankind, though not all for every one: to wit—Baptism, Confirmation, the Eucharist, Penance, Extreme Unction, Order, and Matrimony; and that they confer grace; and that of these, Baptism, Confirmation, and Order cannot be repeated without sacrilege. I also receive and admit the received and approved ceremonies of the Catholic Church, used in the solemn administration of the aforesaid sacraments.

'I embrace and receive all and every one of the things which have been defined and declared in the holy Council of Trent concerning original sin and justification.

'I profess, likewise, that in the Mass there is offered to God a true, proper, and propitiatory sacrifice for the living and the dead; and that in the most holy sacrament of the Eucharist there is truly, really, and substantially the Body and Blood, together with the soul and divinity, of our Lord Jesus Christ; and that there is made a conversion of the whole substance of the bread into the Body, and of the whole substance of the wine into the Blood; which conversion the Catholic Church calleth Transubstantiation. I also confess that under either kind alone Christ is received whole and entire, and a true sacrament.

'I constantly hold that there is a Purgatory, and that the souls therein detained are helped by the suffrages of the faithful.

'Likewise, that the saints reigning together with Christ are to be honored and invocated, and that they offer prayers to God for us, and that their relics are to be had in veneration.

'I most firmly assert that the Images of Christ, of the Mother of God, ever Virgin, and also of other saints, ought to be had and retained, and that due honor and veneration are to be given them.

'I also affirm that the power of indulgences was left by Christ in the church, and that the use of them is most wholesome to Christian people.

'I acknowledge the holy Catholic, Apostolic, Roman

Church for the mother and mistress of all churches; and I promise true obedience to the Bishop of Rome, successor of St. Peter, Prince of the Apostles, and Vicar of Jesus Christ.

'I likewise undoubtingly receive and profess all other things delivered, defined, and declared, particularly by the holy Council of Trent; and I condemn, reject, and anathematize all things contrary thereto, and all heresies which the church hath condemned, rejected, and anathematized.

'I, N. N., do at this present freely profess and sincerely hold this true Catholic faith, out of which no one can be saved; and I promise most constantly to retain and confess the same entire and inviolate, by God's assistance, to the end of my life.'

In addition to these articles, the Rom. Cath. Church has, since the compilation of the creed of Pius V., defined certain further doctrines in the controversy on grace, which arose from the teaching of Jansen (q.v.); still more recently that of the Immaculate Conception of the Blessed Virgin Mary (q.v.); and a still more comprehensive body of articles in the memorable *Syllabus* issued by Pope Pius IX., and in the decrees of the Vatican Council, celebrated under the presidency of the same pontiff. The doctrinal decisions of this latter council are divided into two sections, the first 'on the Catholic Faith,' the second 'on the Church of Christ.' Each section contains a 'scheme of doctrine,' in which the heads of belief, and the grounds on which they rest, are explained; and to each is appended a body of 'canons,' in which the several points are summarized, stated in precise theological language, and defined as articles of 'Catholic belief.' In the scheme 'on the Church of Christ' are contained, in 'an additional chapter,' the celebrated declarations regarding the infallibility of the pope. See *Omnium Concilii Vaticani Documentorum Collectio* (8vo, Paderborniæ 1873).

The details of the discipline of the Rom. Cath. Church would be out of place here. But it may be observed that the Rom. Cath. Church leans toward asceticism, as regards fasting, with less rigor than the Greek and oriental communions; while, on the contrary, as to the Celibacy (q.v.) of the clergy, her law is much more stringent; all the clergy of the Rom. Cath. Church in the sacred orders, including sub-deacons, being so strictly bound to celibacy, that a marriage contracted after ordination is invalid by the church law. This rule does not hold in the various churches of ancient rite which are in communion with Rome: in these churches the aspirant to the ministry is permitted to marry before his ordination as sub-deacon, and may thereafter, as deacon and priest, live in wedlock. But should his wife die he is not permitted to marry again. As well in these

churches as in the Greek and Russian Orthodox communion Bishops are obliged to celibacy. In all that regards the general discipline of the whole church, only the pope or a general council is considered to have power to legislate; national or provincial synods for the discipline of a kingdom or province, and bishops for that of their own dioceses.

For the constitution of the Rom. Cath Church, see HIERARCHY. It is to be noted that under the generic name Rom. Catholics are comprised all Christians who acknowledge the supremacy of the Roman pontiff, even though they be not of the Roman or Latin RITE (q.v.). Not a few individuals and churches of other rites are included under this designation—Greeks, Slavonians, Ruthenians, Syrians (including Maronites), Copts, and Armenians; and these communities are permitted to retain their own national liturgy and language, and for the most part their established discipline and usages. The most remarkable examples of the diversity of discipline thus introduced under the common rule of the Roman pontiff are the retention in the East of the use of the cup for the laity, and the permission of the marriage of the clergy.

As regards its organization for ecclesiastical government, the normal territorial distribution of the Rom. Cath. Church of the several rites in the various countries where it exists is into provinces, which are subject to primates, patriarchs and archbishops, and are subdivided into bishopries or dioceses each governed by its proper bishop. Most of the patriarchates are in the Turkish dominions, but there are three other patriarchates, that of the Indies, that of Lisbon and that of Venice. Antioch, in Syria, has three patriarchs in communion with the see of Rome, one of Latin rite, one of Maronite rite, and one of Melchite rite; and there is, in communion with the same see a patriarch of Cicilia of the Armenian rite and a patriarch of Babylon of the Chaldaic rite.

The Cardinals number, when the college of cardinals is full, 70. The number of bishops of the R. C. Ch. in the world (including patriarchs, primates, metropolitans, auxiliary bishops, and bishops retired), is over 1,100. The bishops who previous to 1882 were officially styled bishops *in partibus infidelium* are now called 'titular' bishops of the sees to which they are named, viz., ancient episcopal cities in Asia Minor, Syria, and Africa, whose churches were overwhelmed by the Mohammedan hordes. Thus the phrase bishop *in partibus infidelium* denotes not that such a bishop exercises his functions in an 'infidel' country, but only that the ancient see from which he gets his title, his *brevet*, is within the dominions of the Mohammedans (*infideles*). Canonically, only one bishop can take his episcopal title

ROMAN CATHOLIC EMANCIPATION ACTS.

ROMAN CATHOLIC EMANCIPATION ACTS (or—RELIEF ACTS): acts in Britain for removal of sundry disabilities formerly imposed on Rom. Catholics. After the Reformation, in England and in Scotland, Rom. Catholics were subjected to many penal regulations and restrictions whose origin was due to the bloody persecutions to which Protestants had been subjected under Rom. Cath. rule. A deep sense of the danger of repetition of such scenes prevailed in the public mind: see MARY I., Queen of England: CRANMER, THOMAS: LATIMER, HUGH: RIDLEY, NICHOLAS: ROGERS, JOHN (1505–55): ETC. As late as 1780, the law of England —which, however, was not always rigidly enforced—made it felony in a foreign Rom. Cath. priest, and high treason in one who was a native of the kingdom, to teach the doctrines of his church or perform Divine service according to its rites. Rom. Catholics were debarred from acquiring land by purchase. Persons educated abroad in the Rom. Cath. faith were declared incapable of succeeding to real property, and their estates were forfeited to the next Prot. heir. A son or other nearest relation, being a Prot., was empowered to take possession of the estate of his Rom. Cath. father or other kinsman during his life. A Rom. Cath. was disqualified from undertaking the guardianship even of Rom. Cath. children. Rom. Catholics were excluded from the legal profession, and it was presumed that a Prot. lawyer who married a Rom. Cath. had adopted the faith of his wife. It was a capital offense for a Rom. Cath. priest to celebrate a marriage between a Prot. and a Rom. Catholic. The law was similar in Ireland, where the large majority of the population adhered to the old faith. In Scotland, also, Rom. Catholics were prohibited from purchasing or taking by succession landed property. The inexpediency and irrationality of imposing fetters of this description on persons not suspected of disloyalty, and from whom danger was no longer apprehended, began about 1778 to occupy the attention of liberal-minded statesmen; and 1780 Sir George Saville introduced a bill for the repeal of some of the most severe disqualifications in the case of such Rom. Catholics as would submit to a proposed test. This test included an oath of allegiance to the sovereign, and abjuration of the Pretender; a declaration of disbelief in the several doctrines, that it is lawful to put individuals to death on pretense of their being heretics; that no faith is to be kept with heretics; that princes excommunicated may be deposed or put to death; and that the pope is entitled to any temporal jurisdiction within the realm. The bill, from the operation of which Scotland was exempted, eventually passed into law. An attempt at the same time to obtain like relief for the Rom. Catholics of Scotland was defeated by an outburst of religious fanaticism. The populace of Edinburgh, stirred up by a body called 'The Committee for the Protestant Interest,' attacked and set fire to the Rom. Cath. churches and the houses of the clergy and of persons suspected to be favorable to Rom. Cath. relief. The frenzy spread to England, where a 'Protestant Association' had been formed to oppose the resolutions of the legislature

see GORDON, Lord GEORGE. In 1791 a bill was passed affording further relief to such Rom. Catholics as would sign a protest against the temporal power of the pope and his authority to release from civil obligations; and in the following year the most highly penal of the restrictions bearing on the Scottish Rom. Catholics were removed without opposition; a form of oath and declaration being prescribed, on taking which they could freely purchase or inherit landed property.

Endeavors were made at the same time by the Irish parliament for riddance of the more important disqualifications, and for placing Ireland on equality in religious freedom with England. In 1780 Grattan carried his resolution that the king and parliament of Ireland only could make laws that would bind the Irish; and separation from England was urged as the alternative with repeal of the disqualifying statutes. The agitation culminated in the Irish rebellion of 1798; the union of 1800 followed, carried partly by means of pledges, not redeemed, regarding the removal of the disabilities in question. Meantime, in England, Rom. Catholics continued subject to many minor disabilities, which the above-mentioned acts had not removed. They were excluded from sitting and voting in parliament, and from numerous offices, franchises, and civil rights, by the requirement of signing the declaration against transubstantiation, and the invocation of saints, and the sacrifice of the mass. In the early part of the 19th c., many measures were proposed for removal of these disqualifications, and in 1813 and succeeding years one bill after another for this end was thrown out. Meanwhile, the agitation on the subject among the Rom. Catholics themselves greatly increased, assuming organized shape 1824 by the formation of the 'Roman Catholic Association' in Ireland, with its systematic collections for the 'Catholic rent.' The Duke of Wellington, who long felt great repugnance to admit the Rom. Cath. claims, was at last brought to the conviction that the security of the empire would be imperilled by further resisting them; and 1829 a measure was introduced by the duke's ministry for Rom. Cath. emancipation. An act having been first passed for the suppression of the Roman Catholic Association—which had already voted its own dissolution—the celebrated Roman Catholic Relief Bill was introduced by Peel in the house of commons Mar. 5, passed both houses, and received the royal assent Apr. 13. By this act (10 Geo. IV. c. 7), an oath is substituted for the oaths of allegiance, supremacy, and abjuration, on taking which Rom. Catholics may sit or vote in either house of parliament, and be admitted to most other offices from which they were excluded. They, however, continue to be excluded from the offices of guardian and justice or regent of the United Kingdom, lord chancellor, lord keeper, or lord commissioner of the great seal of Great Britain or Ireland, and lord high commissioner to the gen. assembly of the Church of Scotland (the disability in the case of the lord chancellor of Ireland was removed 1867). As members of corporations, they cannot vote in disposal of church property or patronage. Ecclesiastics or other members of the Rom. Cath. persua-

sion, either wearing the habit of their order or officiating in any place not their usual place of worship, or a private house, forfeit £50. The statute is that Jesuits, and members of orders bound by monastic or religious vows, must register themselves with the clerk of the peace of their county, under a penalty of £50 for every month that they remain in the kingdom unregistered. Jesuits not natural-born subjects, who have come into the country since the passing of the act, are liable to be banished. Persons admitting others to such societies within the United Kingdom are liable to fine and imprisonment, and those who have been so admitted are liable to be banished. These provisions against Jesuits, however, exist *in posse*, and are not known to have ever been enforced.

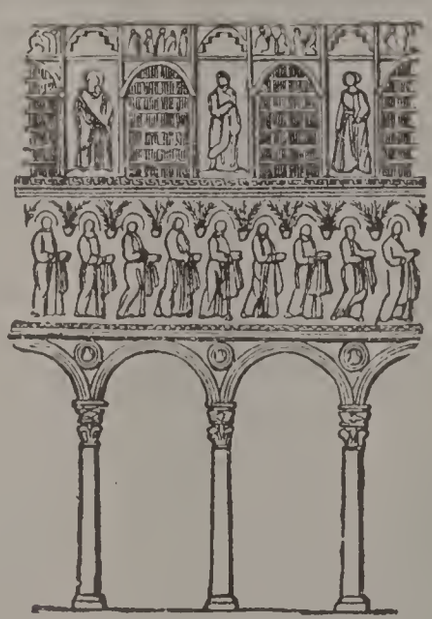
Restrictions on Rom. Cath. bequests were removed by 2 and 3 Will. IV. c. 115, as regards Great Britain, and by 7 and 8 Vict. c. 60, with relation to Ireland. Acts 7 and 8 Vict. c. 102, and 9 and 10 Vict. c. 59, abolished a few minor Rom. Cath. disabilities. British legislation tends in this direction. —For the statutory prohibition against assumption of ecclesiastical titles in respect of places in the United Kingdom, see ECCLESIASTICAL TITLES ASSUMPTION ACT.

ROMANCE, n. *rō-măns'* [Eng. *Roman*, the Latin or common language of Rome, or any language which grew out of it, as the Spanish, Italian, Provençal—from L. *Romānus*, a Roman: F. *Roman* or *Romance*, romance, old French: Sp. *Romance;* It. *Romanzo*, the common vulgar language: Prov. *romansar;* F. *romancier*, to write in the vulgar tongue]: name applied to those languages of Europe (French, Italian, Spanish, and Portuguese) which grew out of the literary Latin of Rome and the ordinary spoken dialects of ancient Italy: but a preferable name for these languages is *Romanic* (see ROMANIC LANGUAGES): in *Sp.*, the term came to signify a ballad; in *Eng.*, applied first to translations from the French, and subsequently a story of fiction, a meaning which the word had acquired in French (see NOVELS AND ROMANCES): any incredible tale of wild adventure in love or war resembling those of the middle ages: ADJ. sprung from the literary Latin and the dialects of anc. Italy: V. to lie; to deal in extravagant stories. ROMANCING, imp. *rō-măn'sĭng:* ADJ. indulging in romance. ROMANCED', pp. *-măns'*. ROMAN'CER, n. *-sẽr*, or ROMAN'CIST, n. *-sĭst*, one who writes romances; one who invents wild and extravagant stories of love or war; a teller of falsehoods. ROMANCERO, n. *rō'măn-sē'rō* [Sp.]: a collection of national ballads or romances. RO'MANESQUE', n. *-ĕsk'* [F.]: style of architecture and ornament adopted in the later Roman empire: the common dialects (called usually Provençal—see ROMANIC LANGUAGES) of some of the southern districts of France, founded on the literary Latin and the dialects of anc. Italy; in *paint.*, that which is made up of fable and romance. ROMANSH', n. *-mănsh'*, the Romanic language of the Grisons of Switzerland—also spelled *Romansch*, *Roumansch*, *Rumonsch*. ROMANY, or ROMMANY, n. *rŏm'ą-nĭ*, a gypsy; the language of the gypsies. see GYPSY.—SYN. of 'romance n.': fable; fiction; tale, novel; story.

ROMANCE OF THE ROSE: a celebrated allegorical poem, one of the most important literary compositions of the middle ages. It consists of two parts, the first part, comprising about 4,000 verses, was written before the middle of the 13th century by Guillaume de Lorris, and the other some 50 years later by Jean de Meung: this contains nearly five times as many verses as the first part. It is a poem of love, but it is also a satire on contemporary manners and a curious repertory of miscellaneous erudition. Guillaume de Lorris, in the introductory lines of the poem professes to set forth the whole art and mystery of Love in allegory, and the Rose is 'the sweet guerdon of love': but commentators were pleased to give this not very obscure intent of the poet a mystical turn, and interpreted the Rose as signifying the divine gift of Wisdom, or the soul's state of Grace, or the state of Eternal Bliss, or even the Virgin Mary. The commingling of allegorical romance with social and political satire, history, science, economic theory, and in short with such encyclopædic erudition as existed in that age, offends the modern literary taste, and is exceedingly tedious reading; but it suited exactly the taste of its time, and for more than two centuries was a classic.

ROMANES, *rō-mān'ĕz*, GEORGE JOHN: English scientist: b. Kingston, Canada, 1848, May 20; d. Oxford, 1894, May 23. He was graduated in 1870 from Caius College, Cambridge, in 1874-6, worked under Burdon Sanderson in the laboratory of University College, London, and carried out important researches in nervous excitability. In 1879 he was elected fellow of the Royal Society, and in 1878 published, under the pseudonym *Physicus*, a work entitled *A Candid Examination of Theism*, in which he took up a somewhat defiant atheistic position. Subsequently his views underwent considerable change; he revised the *Candid Examination*, and toward the close of his life was engaged on *A Candid Examination of Religion*, in which he returned to theistic beliefs. His notes for this work were published after his death, under the title *Thoughts on Religion*, edited by Canon Gore. Romanes was an ardent supporter of Darwin and the evolutionists, and in various works sought to extend evolutionary principles to mind, both in the lower animals and in man. He wrote very extensively on modern biological theories. His chief remaining works are: *Animal Intelligence* (1881); *Scientific Evidences of Organic Evolution* (Nature Series, 1882); *Mental Evolution in Animals* (1883); *Jelly-fish, Star-fish, and Sea Urchins* (1885); *Mental Evolution in Man* (1888); *Darwin and After Darwin* (1892-5); *Examination of Weismannism* (1893); *Mind and Motion, an Essay on Monism* (1895). In 1896 appeared a volume of *Essays*, a selection from his *Poems*, and his *Life and Letters*. He also wrote a book on *Charles Darwin: His Life and Character* (1882). Consult: *The Life and Letters of George John Romanes, written and edited by his Wife* (London, 1898).

ROMANESQUE AR'CHITECTURE, *rō-măn-ĕsk':* debased style which succeeded Roman architecture, from about the time of Constantine (350) to that of Charlemagne (800). It is impossible to fix the date of the style definitely, because Roman Architecture (q.v.) was itself a transitional style, and the one fades gradually into the other. When Constantine proclaimed Christianity the religion of the empire, he gave the Christians freedom of action. They could worship in public, and consequently desired buildings for their service; hence the new impetus to architecture. As explained under APSE and BASILICA, the Christians adopted the Roman hall of justice as the model for their church or place of assembly, and erected many noble basilicas in Rome, Ravenna, and over all the empire. These consisted of three or five aisled halls—the aisles separated by rows of columns. In Rome, the columns, entablatures, and other ornaments were frequently taken from the ruins of ancient buildings which abounded there. The new style is therefore closely allied to the ancient one in the imperial city; but in Ravenna, Jerusalem, Provence, and remoter districts, where few ancient remains exist, a simpler and ruder copy of the ancient work is found. There is always, however, a certain resemblance to the old forms which distinguishes the Romanesque from the round-arched Gothic which succeeded it. The piers along the aisles are always single columns, generally with caps intended to be Corinthian, and wide arches; the aisles are wide, with open wooden roof; and there are remnants of entablatures, moldings, etc., which recall the ancient Roman work. The early Christians derived their round churches also from the Romans. They were probably originally tombs, copied from such buildings



Romanesque Interior.

as the Minerva Medica (see ROMAN ARCHITECTURE), and were the most sacred places, where the burial-service was said, and the sacraments were administered. Hence they afterward became Baptisteries (q.v.), and were finally absorbed into the church (see RHENISH ARCHITECTURE), which

then contained within itself everything connected with the Christian service.

In Rome there are still about 30 basilicas, and the Romanesque style may be said never to have died out there. As we recede from the centre, we find its influence gradually weakening, and succumbing to the northern Gothic. Thus, in Lombardy and Provence, it was superseded by the Lombard (q.v.) and Romance styles in the 11th and 12th c.; while in Byzantium and the East, it gave way to the Byzantian style about the time of Justinian. Among its finest examples remaining are St. Paul's (see BASILICA) and Sta. Maria Maggiore at Rome; and at Ravenna, St. Apollinare; the interior decoration of which last (see fig.) is very beautiful. The mosaics of the apse, the painted walls, and the inlaid pavements of the Romanesque churches, are among their finest features. In color, they always excel.

In Tuscany there is a late form of Romanesque, of which the cathedrals at Pisa and Lucca, San Miniato at Florence, and many churches in those cities, are examples. They are intermediate specimens, built during the 11th c., when the cities became prosperous, and they have a certain amount of Gothic feeling; but though beautiful in colored decoration, they have not the simple grandeur of the early basilicas; and though more decorated externally than these, they have not the bold and purpose-like appearance of Gothic elevations.

ROMAN'IC LANGUAGES; often called ROMANCE LANGUAGES: general name for those modern languages that are immediate descendants of the language of ancient Rome. In those parts of the empire in which the Roman dominion and civil institutions had been most completely established, the native languages were speedily and completely supplanted by that of the conquerors—the Latin. This was the case in Italy itself, in the Spanish peninsula, in Gaul or France, including parts of Switzerland, and in Dacia (see MOLDAVIA, under ROUMANIA). When the Roman empire was broken up by irruptions of the northern nations (5th and 6th c.), the intruding tribes stood to the Romanized inhabitants in the relation of a ruling caste to a subject population. The dominant Germans continued for centuries to use their native tongue among themselves; but from the first they seem to have acknowledged the supremacy of the Latin for civil and ecclesiastical purposes, and at last the language of the rulers was merged in that of their subjects, and the various Romanic languages (e.g., French, Italian, Spanish, and Portuguese) arose; not, however, without leaving decided traces of the struggle—traces visible chiefly in intrusion of numerous German words, and in mutilation of the grammatical forms or inflections of the ancient Latin, and substitution therefor of prepositions and auxiliary verbs. It is also to be noted that the language which underwent this change was not the classical Latin of literature, but a popular Roman language (*Lingua Romana rustica*)—the common language of the people of the Roman empire in s. Europe both for a time before Christ and during the first centuries after Christ—

which had been used by the side of the classical, and different from it—not to the extent of being radically and grammatically another tongue, as some writers unwarrantably conclude—but chiefly by slovenly pronunciation, the neglect or misuse of grammatical forms, and the use of 'low' and unusual words and idioms. As distinguished from the old *Lingua Latina*, the language of the church, the school, and the law, this newly formed language of ordinary intercourse, in its various dialects, was known as the *Lingua Romana;* and from this name, probably through the adverb Romanic, came the term Romance (Prov. and O. Fr. *romans*, Sp. *romance*, It. *romanzo*), applied both to the language and to the popular poetry written in it, especially to the dialect and productions of the troubadours in s. France.

According to the theory of Raynouard (q.v.), the new language that sprang out of the corruption of the Latin was at first essentially the same over all the countries in which Latin had been spoken, and is preserved to us in a pure state in the Provençal, or language of the troubadours; and it was from this as a common ground, and not from the original Latin, that the several Neo-Latin tongues diverged into the different forms which they now present. This theory is not accepted by more recent inquirers; its groundlessness has been demonstrated by Sir G. Cornewall Lewis in his elaborate *Essay on the Origin and Formation of the Romance Languages* (2d ed. Lond. 1862). It is beyond doubt that the several daughters of the mother Latin had their characteristic differences from the very first, as indeed was inevitable. The original Latin spoken in the several provinces of the Roman empire must have had very different degrees of purity, and the corruptions in one region must have differed from those in another according to the nature of the superseded tongues. To these differences in the fundamental Latin must be added those of the superadded German element, consisting chiefly in the variety of dialects spoken by the invading nations and the different proportions of the conquering population to the conquered. French, e.g., as was to be expected, is richer in German words than any other member of the family, having 450 not found in the others. Italian is next to French in this respect. There are about 900 German words in the Romanic languages altogether, of which about 300 are common to them all. A great many of these words are terms relating to warfare.

The term *Romanic* languages seems preferable to *Romance* languages, employed by many English writers, both as Romanic is more in analogy with *Italic*, *Arabic*, etc., and as it avoids the association with a particular kind of literature, and the special Neo-Latin tongue in which that literature was originally written—viz., the Provençal. The varieties of speech originating in the way now described (which received the general name Romanic languages in recent times, first from German scholars—*Romanische Sprachen*) are divided by Diez into six jurisdictions:

1. The Italian, preserving, as was to be expected, the

traits of the mother Latin in more recognizable form than any of the sister tongues. It presents a variety of strongly marked dialects.

2. The Walachian (see ROUMANIA).

3. The Spanish, characterized by copiousness and etymological obscurity, arising from the establishment of so many different nations on the soil. For one element of difference, it contains a large number of Arabic words—as many as 500 terms have been enumerated. Of its various dialects, the Castilian is considered the standard.

4. The Portuguese, including the language both of Portugal and of Galicia: it is nearly akin to the Spanish, but differs too much in some points of grammar to be reckoned a mere dialect.

5. Provençal, the language of s. France, extending on the one side into Spain over Catalonia, Valencia, and the Balearic Isles; and on the other over Savoy and part of Switzerland, about the Lake of Geneva. The line of division between the Provençal and the northern idiom, which has now become the literary language of the whole of France, is drawn usually through Dauphiné, Lyonnais, Auvergne, Limousin, Périgord, and Saintonge. From the use of the affirmative *oc* (= yes), the Provençal (according to scholars generally) was known as the Langue d'oc; as the northern French was called the Langue d'oïl, from *oïl*, modern French *oui* (see LANGUEDOC).* The Provençal was at an early period a cultivated language, with a regular system of grammar, and in the 12th and 13th c. produced a rich poetical literature (see TROUBADOUR).

6. French, extending over the n. half of France, and parts of Belgium and Switzerland. Diez conceives that at first northern French may have been little different from Provençal; but, beginning with the 9th c., it has been more and more distinguished by the greater wearing away of the original grammatical forms. See FRENCH LANGUAGE AND LITERATURE.

The language of the canton of the Grisons (q.v.), anciently *Rhætia*, though sufficiently distinct from Italian and French, is not considered by Diez to have attained sufficient fixity or independence to be ranked with the others as a seventh Romanic tongue. It is called by the Germans Curwälsch, by the people themselves Rumonsch. There are two chief dialects: the Oberland, about the sources of the Rhine; and that spoken in the Engadine (q.v.), called the Ladin.

The chief authorities on this subject are the two great works of Diez (q.v.), the Grammar and the Dictionary of the Romanic Languages. The Dictionary and the Introduction to the Grammar have been translated into English.

ROMANISM, ROMANIST, ROMANIZE: see ROMAN: ROMAN CATHOLIC CHURCH.

---

* Instead of the etymologies of *oc* and *oïl* given in the article referred to, Diez derives *oc* from Lat. *hoc*, this (equivalent to Eng. *so*, It. and Fr. *si*, which are only other forms of the Pronoun [q.v.] *sa* or *ta*); in the north, *oc* was first shortened into *o*, and then compounded with *il* (Lat. *hoc illud*).

ROMANOFF, *ro-mâ'nof*, The House of: famous line, of which the present imperial family of Russia is the chief representative. It is said to have derived its origin from a Lithuanian prince of the 4th c.; but however this may be, it is certain that the family did not make its appearance in Russia till the 14th c., when *Andrew Kobyla* emigrated from Prussia to Moscow 1341, and entered the service of the then grand-duke, Simeon the Fierce.—Andrew's descendants became bojars early in the 15th c., their territories lying in the govt. of Vladimir, and dist. of Jurief-Polskoi.—The bojar *Roman Jurievich*, fifth in direct descent from Andrew, died 1543, leaving a son and daughter; the latter of whom became czarina by her marriage with Ivan the Terrible; while the former, *Nikita Romanovich Jurief*, by his nuptials with the Princess of Susdal (direct descendant from a brother of St. Alexander Nevskoi), was allied also to the royal race of Rurik.—Nikita was one of the regency during the minority of Feodor I.; and his eldest son, Feodor, under the name *Philarete*, was elevated to the rank of archimandrite and metropolitan of Rostof during the reign of the false Dmitri. The Romanoffs supported that party who tendered the Russian crown to the Polish prince, and Philarete had gone with that view to Poland, when a sudden outburst of national sentiment put a stop to these negotiations, and the unlucky envoy was in consequence thrown into prison by the enraged Poles. The national party then proceeded to the election of a native sovereign, who should be as closely allied as possible by blood to the race of Rurik; and after much hesitation and many rejections, they chose Mikail Feodorovich Romanoff, son of the imprisoned metropolitan, and the representative, through his grandmother, of the royal House of Rurik, 1613, Feb. 21. This selection by the higher nobility and the clergy was rapturously applauded by the people; and though the new czar was not quite 17 years of age, the general desire of all classes to conform to his ordinances rendered the cares of government comparatively light.—He was succeeded by his eldest son, *Alexi Mikailovich* (reigned 1648–76), an able prince, who carried on war with varied success against the Swedes and Poles, and acquired great reputation as a legislator. Alexei was twice married, and left by his first wife two sons, Feodor and Ivan, and many daughters, and by his second wife one son, Peter.—His eldest son, *Feodor* (reigned 1676–82), was a prince of much talent and foresight, and labored with success to reduce the power of the aristocracy; but died at the age of 25 without posterity, leaving the throne by his will to his half-brother, Peter, as his full brother, Ivan, was an imbecile.—Seven years after this, *Peter* (see Peter I., the Great) succeeded in obtaining possession of the throne. It is worthy of remark, that hitherto all the czars of the House of R. had mounted the throne before attaining 20 years of age. Peter (see Peter I., the Great) was twice married; by his first marriage, he had a son, Alexei (q.v.), who died during his father's lifetime, leaving one son, Peter, afterward Peter II.; and by his second marriage,

with *Catharine I.* (q.v.) (reigned 1725–27), he had two daughters, Anna and Elizabeth. Catharine I. left the throne to her step-grandson, *Peter II.* (reigned 1727–30), the last of the male line of R.; and on his death without heirs, the succession reverted to the female line.—Ivan, Peter the Great's half-brother, also had left daughters, and their claims to the crown being preferable, one of them, *Anna Ivanovna* (reigned 1730–40), was placed on the throne, and was succeeded by her grand-nephew, *Ivan IV.* (reigned 1740–1); but then a revolution drove Ivan's family from the throne, of which the cadet female line in the person of *Elizabeth* (reigned 1741–61), daughter of Peter the Great and Catharine, obtained possession.—Failing heirs of Elizabeth, her nephew, Peter, son of her elder sister, Anna Petrovna, who had married the Duke of Holstein-Gottorp (cadet of the family of Oldenburg), and died 1728, was the heir-presumptive; and accordingly, on her death 1761, he mounted the throne as *Peter III.* (reigned 1761–2), founding a new dynasty, that of ROMANOFF-OLDENBURG; but his brief tenure of power was ended by his assassination, at the instigation of his wife, Princess Sophia-Augusta of Anhalt-Zerbst, who, as Catharine II. (reigned 1762–96), wielded the sceptre of this mighty empire for 34 years. She was succeeded by *Paul I.* (q.v.) (reigned 1796–1801), her only son by Peter III.; and Paul, also, after a brief reign, was assassinated, leaving several sons, the eldest of whom was *Alexander I.* (reigned 1801–25); but as he left no issue, the crown at his death devolved by right on his next brother, Constantine. Constantine had, however, in compliance with the wish of his elder brother, previously relinquished his claims to the supreme power, and the third brother, *Nicholas I.* (reigned 1825–55), ascended the throne. Nicholas left at his death four sons and several daughters, and, 1891, his grandson, *Alexander III.* (began reign 1881), is the present czar.

ROMAN RELIGION, ANCIENT: conglomeration of the most widely different theological or rather mythological elements, introduced by the various strata of immigrations that flowed into different parts of Italy at different prehistoric times. It was chiefly under Greek influence that it assumed that most characteristic and systematic form under which it was known during the classical times of Rome, and as which it generally presents itself to our minds. Numa Pompilius (q.v.), mythic successor of Romulus, is by the primitive legend mentioned as founder of the Roman religion, or rather of its ceremonial law. He is probably the type of the period when first the religious notions of the Sabines were joined to the primitive elements of legendary belief of the early settlers. Among the vast number of the different and obscure component elements, the Pelasgian, Sabellian, Oscan, Gallic, etc., out of which grew the recognized state religion, we can, with comparative clearness, distinguish chiefly three—the Etruscan, the Sabine, and the Latin. For the religion of the Etruscans —as distinct from the Pelasgians (q.v.)—see ETRURIA. Of the gods of the Latins, many are closely related to those of the Greeks (see GREEK RELIGION), a fact easily accounted for by their common eastern origin (see ROME—'general term for the territory,' etc.—*History*): others, however, seem indigenous. Their principal deities are Tellus (q.v.) (the earth); Saturn (q.v.) (god of seeds), and his wife, Ops (goddess of earth and plenty), who are somewhat akin to Kronos and Rhea; Jupiter (q.v.), with Juno (q.v.), givers of light. Deities more peculiar to the Latins are Janus (q.v.) and Diana (q.v.). Faunus and Fauna are prophesying wood-deities, and were allied to Lupercus, in whose honor the Lupercalia (q.v.) were celebrated; Picus and Pilumnus, who preside in some way over agriculture and the fruits of the field; Vesta (q.v.); Fortuna (q.v.); Ferentina, goddess of leagues. A number of agrarian deities (Anna Perenna, Venus, etc.) form, with those mentioned, the bulk of 'native' Latin numina. Of chiefly Sabine deities were Feronia (the Ferentina of the Latins), a goddess of the soil, worshipped with gifts of flowers and fruits; and the two war-gods, Mars and Quirinus—the former a deity worshipped at first under the symbol of shield and spear, and of high importance for colonizations, to whom every animal and every human being born in a certain year was sacred; the animal being doomed to be sacrificed, and the person at the age of 20 to emigrate and to found new settlements: Quirinus, a deity of strife, closely connected with the myth of Romulus. Sabine deities were also Sol, the sun, Luna, the moon, etc.

Having thus traced some of the principal gods and goddesses (for many of whom see the proper titles) to the respective nationality that first introduced them into Italy, we turn to a brief glance at the Roman Pantheon as it appeared when it had embodied systematically these acclimatized primeval idealizations: for it was as characteristic of the Roman gods to appear in sets, as it was for the more personal gods of the Hellenes to appear singly. The

Romans made them fall rationally into rank and file, each with a distinct mission of its own; and thus filled with them, as with authorities over special departments, the whole visible and invisible world—above, below, and around. The first rank of all is taken by the three Capitoline deities, personifications of highest power, highest womanliness, and highest wisdom—Jupiter (q.v.); Juno (q.v.), Queen of Heaven, and tutelary deity of women; and Minerva (q.v.). The stars also had three foremost representatives—Sol, the sun, Luna, the moon, and Tellus, the earth. The supreme deities of the infernal regions were Orcus; Dis (Dives, Consus?), and his wife, Queen of the Empire of the Shadows, Libitina. The element of the water was presided over by Neptune (q.v.); that of the fire by Vulcan (q.v.), god of the smithies, and by Vesta, goddess of the domestic hearth and its pure flame. Agriculture and rearing of cattle were sacred to the ancient Latin king Saturnus, whose wife, Ops—personifying the riches therefrom accruing—had, like Demeter, her seat in the soil. Ceres, Liber, and Libera, the three Greek deities of agricultural pursuits, were superadded about B.C. 500. Pales, special protector of flocks, and his festival (the Palilia), were celebrated on the foundation-day of Rome. Mars himself was the supreme deity of the Romans next to Jupiter. Deities of oracles are Faunus, a deified king, who gave his obscure decisions either in dreams or in strange voices, and his female relative—wife, daughter, or sister—Fauna (Bona Dea), who attends only to the female sex; and the Camenæ, prophesying nymphs, of whose number was Egeria, Numa Pompilius's inspirer. The Apollo worship was of late growth in Rome. The Parcæ represented the unchangeable fate of the individual. Fortuna was, on the contrary, the uncertain chance of destiny, the 'luck' to be invoked at all important junctures. Salus, Pax, Concordia, Libertas, Felicitas, Pietas, Virtus, Honos, Spes, and a host of other abstract notions, explain themselves. Venus became important first when identified with Aphrodite; in the same way as Amor, Cupido, and Voluptas were Greek importations brought into prominence by the poets chiefly. Life, death, and life after death were made concrete, by the Genii, the Lares, Manes, and Penates: see LARES AND PENATES (under LAR).

Like the Greeks, the early Romans had no 'mediators,' but addressed their prayers and supplications directly to the individual god. The priesthood, we find, in the classical period, had arisen originally from the 'kindlers (*flamines*) of Mars,' or those who presented burnt-offerings to the early Italian war-god Mars, and the 12 dancers (*Salii*) who in March (the month of Mars) performed war-dances in his honor. To these came the 'Field Brethren,' the 'Wolf-repellers,' etc.; and thus by degrees an endless and most powerful hierarchy came to be built up. By the side of it, but not identical with it, were certain sacred colleges, which kept the sacred traditions alive, and were the supreme authority on religious observances. These were the colleges of Pontifices (q.v.) or Bridge-builders, of

Augurs (see AUGURIES and AUSPICES); the keepers of the Sibylline Books (see SIBYL); the 20 Fetiales or state heralds, the supreme—advising, not executing—authorities on international law; the Vestal virgins, on whom devolved the guardianship of the Palladium and of the sacred fire; the Salii (see above); and others. Priests in the stricter sense of the word, in the service of special deities, were the Flamens (q.v.); while the Dea Dia, goddess of fields (Tellus, Ceres, Ops, Flora), had the special brotherhood of the 12 Arvalian brothers, with their numerous followers. The state sacrifice, which before the expulsion of the mythical kings was supposed to have been offered up by these, was offered by a special *Rex Sacrorum* or *Rex Sacrificulus*.

The mode of worship was analogous to that of the Greeks. Votive offerings, prayers, vows, sacrifices, libations, purifications, banquets, lays, songs, dances, and games made up the sum of their divine service. The sacred places were either *fana, delubra*—mere hallowed spots on hills and in groves—or *templa, ædes*—special buildings dedicated to a special deity. The latter contained two altars—the *ara*, for libations and oblations; and the *altare*, for burnt-offerings chiefly. Frugality, as it pervaded in the classical period the domestic life, so it also prevented all extravagance of offerings to the deity, and all excess of rejoicing before it. Sober and dull as the Roman religion undoubtedly was—for it never once expanded into the joyful extravaganecs of fancy with which the Greek religion was fraught throughout—it kept free from the inhuman pollutions and abominations that are the natural offspring of such unbounded sway of fancy. Human sacrifices, as far as they are found, grew out of the idea of substitution, and were chiefly enthusiastic voluntary acts of men who threw themselves into the breach; or they carried out decrees of civil tribunals which had convicted the 'victim' of a deadly offense. In their dealings with the gods, the Romans were pure merchants, carrying out their promises with strict literalness, and thus often fraudulently, against the patent inner meaning of their promises; but the gods were not to them the all-pervading essences, but rather creditors, strict and powerful, yet unable to exact more than was agreed upon outwardly.

A code of moral and ethical rules, furthering and preserving civil order, and the pious relations within the state and family, were the palpable results of this religion, which, in its barrenness of metaphysical notions, did next to nothing for the furtherance of art.

And here we must enter somewhat more fully into that peculiar phenomenon of the utter dissimilarity in the characters of the Greek and Roman religion, which has before been intimated—a dissimilarity all the more surprising as the self-same symbolical and allegorical views of nature, filtered through however different channels, form the foundation of both. Both also—especially in their later stages—offer a general analogy not only of deities and spirits, but even of holy places and their mode of wor

ship. But the fact is that they each took the originally common stock of notions and conceptions, clad more or less in mythical garb, and utterly transformed it, superadding to it from time to time according to their own distinct nationality. It is here, however, that their characteristic traits come out in as forcible a contrast as they do in every other relation of life, in their art and culture, in their states and families. While to the Hellenes the individual was the chief end of all things, and the state existed for the citizen, and the ideal was the *Kalokagathia*, the beautiful good, the Romans imposed, as the highest duty, submission to authority—the child to the father, the citizen to the ruler, and all to the gods. To them, only that which was useful appeared good. Idleness was not to be tolerated in a community where every single member existed only as far as contributing to the greatness and aggrandizement of the commonwealth. Hence, with them, a rational thoughtfulness, and a grand and awful austerity in their relations with men and gods; while the Greeks treated both with joyous serenity. The Greek invested his gods with human attributes, and then surrounded them with a halo of highest splendor and glorious divine beauty; but he constantly modelled and remodelled them, until they reached the acme of beautiful perfection, as would the painter and the sculptor with their work. The Roman, on the other hand, cared nothing for the outward form of his idealized notions—the notions themselves, mere fundamental ideas, were his sole object of veneration. The Greeks made everything concrete, corporeal, and individual; the Romans, abstract and general. The Greeks could worship only allegories; the Romans, abstractions. Hence, also, the utter discarding by the Romans of many of the myths common to the whole Indo-Germanic stock, the unmarried and childless state of their gods, who, moreover, wanted no food, and did not wander about among men, as did the Indian and the Hellenic. As in the late Midrash, which partly has found its way into Christianity, there was a heavenly Jerusalem right over the earthly Jerusalem, in which all things below were reproduced in an exact but most ideal and divine manner. Thus, the Roman Pantheon was the counterpart of the Roman world as it existed in reality. Every man, and thing, and event, and act had a corresponding tutelary deity, that came and went with the special individual, phenomenon, or event; and eternal gods were those only that represented certain great unchanging laws of nature. The angels of the legendary lore of later Judaism and early Christianity, that protect special nations, were with the Romans the gods of these nations, and historically were admitted, as their special numina, into the divine commonwealth of the Romans simultaneously with the admission of these nations into the Roman pale of freedom.

As long as the grand old Roman simplicity of manners, the frugality of domestic life, the indefatigable pursuit of agriculture, trade, and commerce, lasted—and all of these were well characterized by the deep reverence paid to gods

(albeit not in the highest scale of divine order), who presided over the house, the field, the forest, mercantile enterprise, and the like—Vesta, the Penates, the Silvani, the Lares or Lases, Hercules or Herculus (a native Italian deity, the god of the inclosed homestead [compare Jupiter *Herceus*], apparently distinct from the Greek Heracles), as the god of property and gain, whose altar, as god of faith (*Deus fidius*), was as frequently to be met with as those of the goddess of chance (Fors, Fortuna) and the god of traffic (Mercury)—so long did Roman religion, properly so called, retain its firm hold on the people's minds, and its influence cannot easily be overrated. But when the antique austerity, the olden spirit of grand independence, the unceasing hard work that steeled body and soul, had given way to the lazy luxurious ease of later times—then Roman religion ceased to exist in reality, and over its ruins rose a mad jumble of unbelief, Hellenism, sectarianism, and oriental creeds. The ancient *religio*, the binding faith, which had excited the admiration and astonishment of the Greeks, had waned; and in proportion with the unbelief rose the pomp, and stateliness, and luxury of public worship. To the hierarchy of augurs, oracle-keepers, and pontifices were superadded special banquet-masters for the divine banquets. The priests more and more freed themselves from taxes and other public burdens, and the custom of perpetual endowments for religious objects crept in, as their influence waxed stronger and stronger. 'Pious services' became as much an item of domestic expenditure as the cook's and nurse's wages. Penny collections for the 'mother of God' were gathered on certain fixed days by the sound of fife and drum played by priests in oriental garb, headed by a eunuch, from house to house; and the whole substance of Roman faith was transformed into an unwieldy mass of dark, grovelling mysticism and shameless profligacy, presided over by wretched gangs of uneducated and unprincipled priests. This state of things favored the gradual introduction of Judaism and Christianity into the dying days of imperial Rome (see GNOSTICS). Constantine the Great abolished the last outward trace of Roman religion by proclaiming Christianity as the state religion.—For most part of the gods and goddesses above mentioned, see the respective titles. See also GREEK RELIGION: ETRURIA: PELASGIANS: ETC. For fuller teatment of the whole subject, see Mommsen's *History of Rome* (Eng. transl. Lond. 1864).

ROMANS, *ro-mŏng':* town of France, dept. of Drôme, on the right bank of the Isère, 14 m. n.e. of Valence. A bridge, founded in the 9th c., connects R. with the small town of Péage, on the left bank of the river. R. owes its origin to an important abbey, founded in the 9th c. by Saint Bernard, Abp. of Vienne, and by a nobleman named Romain, who gave his name to the town. Silk and woolen fabrics are largely manufactured, and a very active general trade is carried on. Pop. (1872) 9,893; (1886) 12,822.

ROMANS, *rō'manz*, EPISTLE TO THE: one of the canonical books of the New Test., doctrinally the most profound and elaborate composition of the apostle Paul. That it proceeded from him has never been seriously doubted by any competent scholar. Much discussion has taken place regarding the *composition* of the church at Rome, and —connected therewith—the design or object of the epistle. Were the members of the church Jewish or Gentile Christians? The general opinion of commentators is that the church was a mixed congregation, the majority of members being probably of pure Gentile descent, and the minority Jewish Christians, who perhaps formed the original nucleus of the church. Dr. Jowett, in his *Epistles of St. Paul to the Romans, Galatians, and Thessalonians*, suggests that the phenomena of the text—e.g., the frequent appeals to the authority of the 'law' addressed to Gentiles—may be best explained on the hypothesis that the apostle is speaking to a Gentile congregation which had passed through a phase of Jewish proselytism. The great value of the Epistle to the Romans consists in its exhibition of the *rationale* of Christianity. The immediate object of the apostle was probably to prevent in the church at Rome those violent antipathies of religious sentiment between Jews and Gentiles which had shown themselves elsewhere (e.g., at Corinth) and had produced such disastrous consequences; but for a complete accomplishment of this object —as also of his always controlling desire to make known Christ and his salvation—he takes a broad *ethical* view of human nature, and finds all men—Jews and Gentiles alike —estranged from God, and in need of pardon and reconciliation. He does not underrate the advantages which his Jewish countrymen possessed—nay, he extols them; but he points out at the same time that the 'oracles' or 'law' could not make the Jews holy: they could only condemn them for being unholy. The Gentiles were declared guilty not less decisively by their own consciences—the law was plainly enough 'written in their hearts.' Hence Paul's grand argument, that if men are to stand as 'righteous' in the sight of God, it cannot be by their 'works,' but in virtue of a Divine justification graciously vouchsafed to them, and received into their hearts by an act of faith. This leads him to unfold the purpose and significance of Christ's work, to dilate on the 'freeness' of God's grace toward 'sinners,' i.e., toward all men, made manifest as it was especially in the case of those whom God had chosen in His sovereign love. He concludes by predicting the conversion of his 'kinsmen according to the flesh,' exhorting the Gentiles to humility, charity, mutual forbearance, and the practice of all the Christian virtues. The epistle is believed to have been written from Corinth during Paul's third missionary journey, A.D. 59. The commentaries on it, or on special chapters, are innumerable; and almost all the great doctrinal controversies that have agitated Christendom have sought their weapons in it.

RO'MANS, KING OF THE: title assumed by the German emperors: it never expressed actual kingship. Pepin and

Charlemagne were each styled simply *patricius Romanorum*, 'patrician of the Romans;' the successors of Charlemagne were for a long time content with that style: thus it was as *patricius* that Otho I. intervened in the affairs of the city 954; and it was as *patricius* that Otho III. sought to restore the ancient dignity of Rome. But in later times it became the custom for the German emperor to style himself King of the Romans, and the last head of the Holy Roman Empire, Joseph II., bore that title.

ROMANTIC, a. *rō-măn'tĭk* [from ROMANCE, which see]: pertaining to romance, or resembling it; wild; extravagant; full of wild or fantastic scenery, with which the sublime and the beautiful are more or less blended. ROMAN'TICALLY, ad. *-lĭ*. ROMAN'TICNESS, n. *-nĕs*, the state of being romantic. ROMAN'TICISM, n. *-tĭ-sĭzm*, a term used to express the unnatural productions of the modern French school of novelists. ROMAN'TICIST, n. a follower of romanticism (see ROMANTIC SCHOOL).—SYN. of 'romantic': sentimental; fanciful; fictitious; wild; chimerical; extravagant.

ROMAN'TIC SCHOOL: name assumed first in Germany, about the beginning of the 19th c., by a number of young poets and critics, A. W. and Fr. Schlegel, Novalis, Ludwig Tieck, Wackenroder, etc., who wished to indicate by it that they sought the essence of art and poetry in the wonderful and fantastic—elements pre-eminent in the Romance literature of the middle ages. Their efforts were directed to the overthrow of the artificial rhetoric and unimaginative pedantry of the French school of poetry, even then influential; and to the restoration of a belief in the mystery and wonder that envelop the existence of man—a belief that had been rudely assailed and mocked by the prevailing materialism in all departments of thought. Thus, their purpose was twofold—in part æsthetic, in part religious. As poetical reformers, the Romantic School in Germany unquestionably exercised a most beneficial influence; but as religionists—though their aim was intrinsically high and noble—they more or less consciously subserved the designs of a reactionary government, and so came to be hated and distrusted by the liberal politicians and thinkers of Germany.—See Eichendorff's *Ueber die ethische und religiöse Bedeutung der neuern Romantischen Poesie* (Leip. 1847); H. Heine's *Zur Geschichte der neuern schönen Literatur in Deutschland* (Hamb. 1833); Hettner's *Die Romantische Schule* (1850); R. Haym's *Die Romantische Schule* (1870); and the Danish work of Brandes (1873).—Between 20 and 30 years later, a similar school arose in France, and had a long struggle for supremacy with the older Classic School. It was victorious, but not wise; and, except in a few instances—such as Lamartine and Victor Hugo—it has rushed into excesses of caprice both literary and moral, which have stamped it with a revolutionary rather than a reformatory character.—See Tenuet's *Prosodie de l'École Moderne* (1844); Gautier's *Histoire du Romantisme* (Par. 1874).

ROMANZOVITE, n. *rō-măn'zō-vīt* [after Count *Romanzoff*]: a brownish-black variety of lime-garnet.

ROMBAUER, Roderick Emile, ll.b.: American lawyer: b. Seleszto, Hungary, 1833, May 9. He was a captain of volunteer infantry during the civil war; was judge of several of the law courts in St. Louis, and was professor of law and equity in Washington University. He has written *The History of a Life* (1903).

ROMBLON, *rōm-blōn':* Philippines. (1) A province consisting of a group of islands in the Visayan Sea, lying e. of Mindoro and s. of Luzon; they are near the centre of the archipelago, and the most northern islands of the Visayan group; area, 515 sq.m. The northern islands of the group form with the islands of Mindoro and Marindique clear, deep channels, much frequented by Philippine boats; the islands are also indented with well-sheltered inlets and bays. The majority of the inhabitants of the province are Visayans; some Negritos are found on the island of Tablas, and Manguianes in Tablas and Romblón. Civil government was established in 1901. Pop. 55,339. The islands constituting the province are as follows: (*a*) Bantón, the most northerly island of the group; the surface is rugged except in the s.e.; the soil is sterile, and few crops are raised; the chief industry is the mining of gypsum, an excellent quality of which is found; area, 11 sq.m.; (*b*) Carabao, the most southern island of the province; its chief physical characteristic is a central cone-shaped summit, from which the land slopes regularly to the sea; it is heavily wooded, but not inhabited; area, 19 sq.m.; (*c*) Dos Hermanas, two islets of rock, separated by a channel 2 m. in width; area, 1 sq.m.; (*d*) Maestre de Campo, the most western island of the province; it is circular in shape, and mountainous with steep shores; it contains one small village on the e. shore; area, 3 sq.m.; (*e*) Romblón, the third island in size, giving its name to the group on account of central location and mineral wealth; (*f*) Sibuyán, the second largest and most eastern island of the group (see Sibuyan), and (*g*) Tablas, the largest island (see Tablas).

(2) An island of the province of Romblón, lying midway between Sibuyán and Tablas, on the route of steamers passing through San Bernardino Strait and Verde Passage; area 50 sq.m. A central mountain range traverses the island from n. to s., with spurs extending toward e. and w. The chief occupation of the people is cattle raising; valuable deposits of quartz, marble, and slate are found and quarried; the marble is exported in large quantities. This island is the seat of government for the province.

(3) Pueblo, capital of the province of Romblón, situated on the northwestern coast of the island of Romblón, the largest town of the province. It has an excellent harbor, one of the best of the Visayan group; and is the commercial centre of the island. It has some old fortifications originally built to defend it from pirates. Pop. 6,764.

ROME, n. *rōm* [L. *Rom'ulus*, its founder; *Roma*, Rome]: the chief city of anc. Italy, and now of the kingdom of Italy; the seat of the popedom; the Rom. Cath. religion. ROMISH, a. *rō'mish*, of or belonging to the Chh. of Rome; a term offensively applied to the adherents of the Rom. Cath. Chh. RO'MISHLY, ad. *-lĭ*.

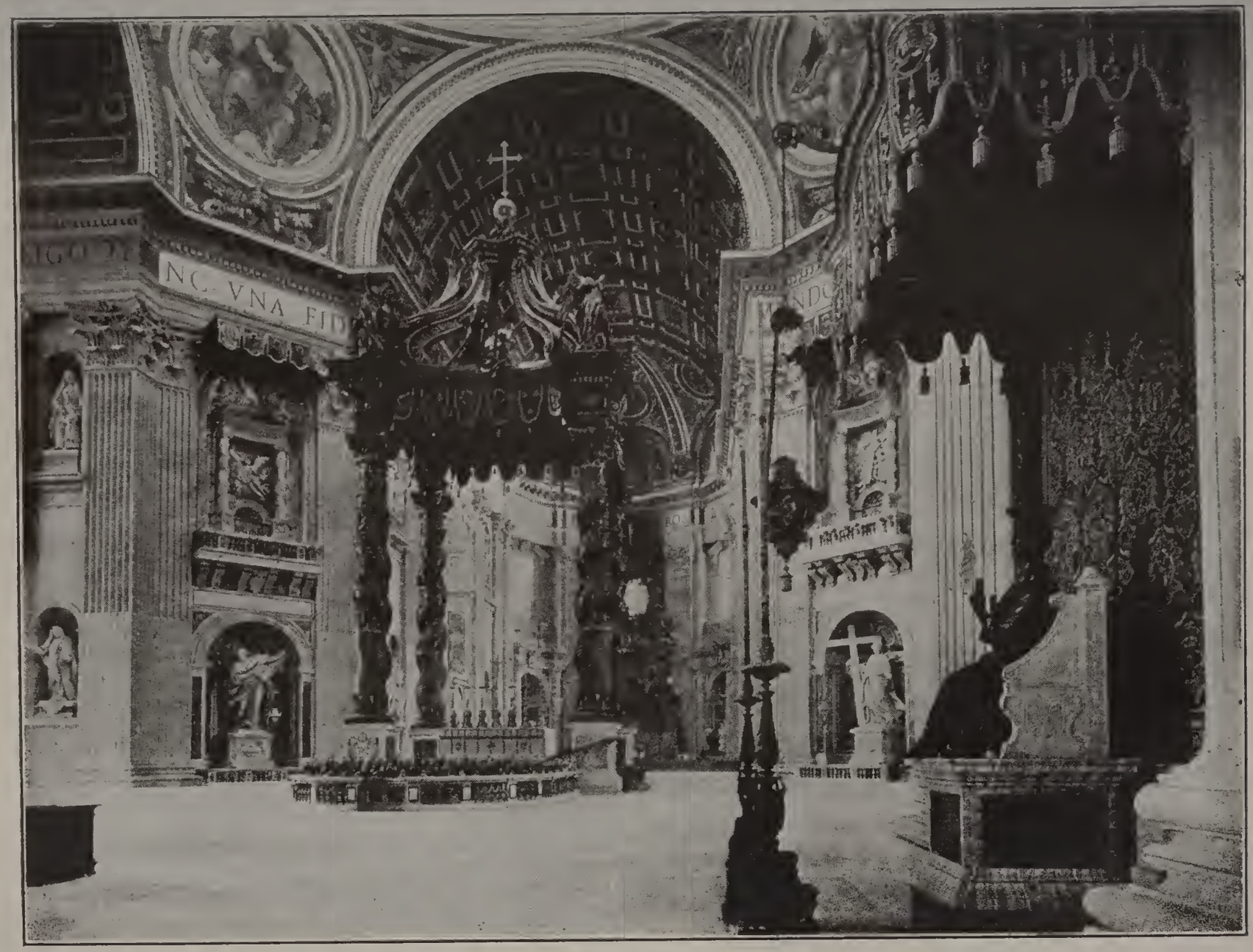
ROME, *rōm:* general term for the territory, population, institutions, and historical state of ancient Italy, as connected with the cap. city, ROME (q.v.). These are in part treated under special titles of provinces, peoples, etc. As the Roman state gradually conquered and incorporated with itself the other states and territories of the Italian peninsula, and as these (in general) figure separately in history only during the process of this subjugation, it is convenient to consider them here.

Ethnology.—In the earliest times we find in Italy *five* distinct races; three of which (IAPYGIANS, ETRUSCANS, and ITALIANS) may, in a restricted sense, be termed 'native' inasmuch as we do not meet them elsewhere; and two, GREEKS and GAULS, 'foreign,' inasmuch as their chief settlements were not in Italy, but in Greece and Gallia. But, ethnologically, this distinction is arbitrary. There is no reason for believing that the first three races were indigenous, and the last two immigrant: the analysis of their languages, or of such fragments of their languages as survive, leads strongly to the conclusion that all were alike immigrant, and that in this respect the only difference between them is one of *time*.—1. *The Iapygians.*—This race, monuments of which in a peculiar language (as yet undeciphered) have been found in the s.e. corner of Italy—the Messapian or Calabrian peninsula—is probably the oldest.—2. *Etruscans.*—The origin of this mysterious people is certainly one of the most interesting, as also one of the most insoluble, problems in history. For their history, character, and civilization, see ETRURIA.—3. *Italians.*—At what period the earliest immigrations into Italy of the so-called 'Italian' races—the Latins and Umbro-Sabellians—took place, is unknown; but it was undoubtedly long before the Etruscans had settled in Etruria. They were by far the most important of the various races that inhabited the peninsula; in fact, the entire historical significance of Italy depends on them; therefore it is fortunate that their ethnological origin and affinities are capable of certain demonstration. An investigation of their language, sub-divided indeed into numerous dialects, often widely differing, but fundamentally the same, has resulted in the discovery that they belong to the great Aryan or Indo-Germanic family (see ARYAN), and are in particular closely allied to the Hellenes. There is no doubt, therefore, that at some very remote period a race migrated from the original home

of the 'Aryans' (the East, say some authors; the plains of n. central Europe, say others), embracing the ancestors of both Greeks and Italians. By what route they proceeded, or at what point they diverged, we can only conjecture; for the problem is not yet solved whether the Hellenes reached Greece by way of Asia Minor or from the regions of the Danube. There is ground for believing that the Latins were the first members of the Italian family to enter Italy, and that, having crossed the Apennines, they spread themselves south along the w. coast, driving the Iapygians before them, and finally cooping them up in the Calabrian peninsula—the heel of the boot. But this conquest belongs to prehistoric ages, and the original Latins of Campania, Lucania, Bruttium, perhaps even Sicily—i. e., the races spoken of in classic legend, as the Itali, from whom the peninsula received its name, the Margetes, Ausones, Siculi, etc.—were themselves in the course of time so thoroughly Hellenized by the influence of the rich and powerful Greek colonies planted on their coasts (see MAGNA GRÆCIA), or so overwhelmed by successive invasions of Samnite hordes, that nearly every trace of a primitive Latin nationality has disappeared. It was only in Latium proper, where no Greek colonies were founded, and where the fortune of war was in its favor, that the Latin branch of the Italian race firmly rooted itself. There, however, it did flourish, and petty as the district might seem—not more in all than 700 sq. m.—it was incomparably the most important in the peninsula, for within its limits rose those seven hills on which a city was to be built that was destined to subdue and govern the world. The other branch of the 'Italian' stock—the Umbro-Sabellian—must have entered Italy at a later period than the Latin. Its advance along the central mountain ridge—the Apennines—from n. to s., can still be traced; and its last phases—i. e., the conquest of Campania and the other southern districts of the peninsula by the Samnite highlanders—belong to historical times. The oldest members of this branch are probably the Sabines (q.v.) who seem to have fixed themselves in the mountainous region n. e. of Rome, and are regarded as the progenitors of that multitude of tribes which we find occupying the central portion of Italy—the Picentes, Peligni, Marsi, Æqui, Vestini, Marrucini, Frentani, Samnites—perhaps also the Volsci and Hernici.—4. *Gauls.*—To a period considerably later and comparatively historical belongs the settlement of the Gauls in the n. and of the Greeks in the s. of Italy. The Gauls, a branch of the Celtic race, itself now ascertained to be also a member of the great Aryan family (see CELTIC NATIONS)—therefore allied, however distantly, to the other Italian races—had, for ages before history begins, fixed themselves in the region now known as France. Finding further progress

westward barred by the waves of the Atlantic, and being of a restless and excitable disposition, they turned their steps e. and s.e., broke over the Alps (according to the legend in Livy, by the Little St. Bernard) some time during the 3d c. after the founding of Rome, and poured down into the plains of the Po. The first Gallic tribe that made its appearance on the soil of the Peninsula is said to have been the Insubres, whose capital was Mediolanum (Milan); then followed the Cenomani, whose headquarters were Brixia (Brescia) and Verona, and afterward numerous kindred hordes, among the latest and most powerful of whom were the Boii (q.v.) and Senones, who forced their way across the Po, and effected a lodgment in the modern Romagna, occupying (besides an inland district) the coast of the Adriatic as far s. as Ancona. Hence, in ancient times, the whole of n. Italy was for a long period known as Gallia Cisalpina (Gaul on *this*, i.e., the Italian, side of the Alps), to distinguish it from Gaul proper, which was called Gallia Transalpina. Gallia Cisalpina was again sub-divided into two parts by the river Padus (Po); the northern being named Gallia Transpadana, and the southern (the country of the Boii and the Senones) Gallia Cispadana. Various other tribes or peoples are found in n. Italy, such as the Ligurians (along the Gulf of Genoa) and the Veneti (in modern Venetia), regarding whose origin—in the absence of all linguistic and other memorials—we are utterly in the dark.—5. *Greeks.*—The other people which we have distinguished as 'foreign' was the Greek. There is, however, this distinction to be observed, that the Greeks were not (like the Gauls) barbarians: they did not swoop down upon the southern shores of Italy to plunder and devastate; nor did they force their way into the interior and disposses the natives; they merely colonized the coasts, built cities, and carried on commerce.

Primitive Social Condition of the Latins.—With this brief introductory sketch of the various races that inhabited Italy in historical or prehistorical times, we revert to the Latins, with whom more particularly we have at present to do. What was the extent of their civilization, or how far their social organization had proceeded when they finally settled in the 'broad plain' that stretches w. from the Alban hills to the sea, may be conjectured, but has not been ascertained. We know, indeed, that long before they had set foot in Italy, before even they had branched off from their Hellenic brethren, they had ceased to be *mere* nomads, or wandering shepherds. The evidence of this fact lies in their language. Not only do the names of the oldest Latin nations, as the *siculi* ('the sickle-bearers' or 'reapers'), and the *osci* or *opsci* ('field-laborers'), clearly prove the antiquity of Italian husbandry, but the oldest agricultural terms are actually common to both Latins and Greeks (e.g., Lat. *ager*, Gr. *agros;* Lat. *aro. aratrum*, Gr. *aroō, arotron;* Lat. *ligo* (a hoe), Gr.



INTERIOR OF ST. PETERS, ROME.

lachaino; Lat. *hortus,* Gr. *chortos;* Lat. *milium,* Gr. *melinē,* Lat. *rapa,* Gr. *raphanis;* Lat. *malva,* Gr. *malachē;* Lat. *vinum,* Gr. *oînos*). Moreover, the form of the plow was the same among both peoples, as also their mode of cutting and preparing the grain; many of the usages of social life; the oldest methods of measuring the land; and the style of their national dress—the Latin *tunica,* corresponding exactly with the Greek *chiton,* while the Latin *toga* is only a fuller *himation.* Their method of building also was the same. Such evidence (and it could easily be extended) must be regarded as conclusively showing that, before the Latino-Italians entered Italy, they had been accustomed to till the ground, to make wine, to keep gardens, to build houses, and to clothe themselves decently. As to their social organization, less can be said. It appears, however —judging from the general bearing of the most ancient traditions, as also from the features exhibited in historical times—that at a very early period, and from causes of which we are now absolutely ignorant, they had begun to develop the germs of what may be called 'state-life.' As among their Hellenic brethren, the original foundation of their social constitution was 'households' [Gr. *oikiai,* Lat. *vici* or *pagi*—from *pangere,* to 'fix' or 'drive in;' hence 'to build']: these households, either by ties of blood, or by nearness of locality, were aggregated into clans, and their dwellings formed clan-villages (thus *pagus,* which probably meant at first only a single 'household,' came, by a natural transition, to denote a collection of households—a hamlet, or a village). Such clan-villages were, however, not regarded as independent societies, but as parts of a political canton or community—the *civitas* or *populus.* Each canton or *civitas* possessed a local centre or place of assembly, where justice was administered at regular intervals, where markets and sports were held, and religious rites celebrated, and which was besides fortified to serve as an asylum or place of refuge for the inhabitants of the open hamlets and their cattle in time of war. Such a centre was termed the *capitolium,* i.e., 'the height,' from being originally fixed on a height or hill-top, and corresponded to the *akra* of the Greeks. Round this stronghold of the canton, which formed the nucleus or beginning of the earliest Latin towns, houses gradually sprang up, which in their turn were surrounded by the *oppidum* ['work,' from *opus*], or the *urbs* ['ring-wall,' connected with *urvus, curvus, orbis*]; hence, in later times, *oppidum* and *urbs* became, naturally enough, the recognized designations of town and city. Evidence is not wanting for this view of the genesis of the Latin towns. In the ruder and more mountainous districts of central Italy, occupied by the Marsi, Æquicoli, etc., the system of living only in open villages prevailed even till the close of the empire; and there the Roman antiquarians found, to their surprise, those solitary strongholds, with their mysterious ring-walls, which, on the soil of Latium-proper, expanded into towns, but in the recesses of the Apennines never advanced beyond their original design.

The sites of the oldest of these cantonal centres or primi-

live towns in Latium are to be sought on the slopes of the Alban hills, where the springs are freshest, the air is most wholesome, and the position most secure. Tradition (which makes Alba Longa the oldest seat of a Latin community) is here in accordance with natural probability. The story of the foundation of *Alba Longa* by Ascanius, son of Æneas, and the introduction of a Tyrrheno-Trojan element into the primitive history of Latium, is utterly fabulous. On the same slopes lay Lanuvium, Aricia, and Tusculum, to whose great antiquity ancient tradition bears testimony in many ways; on the offshoots of the Sabine range, in the e. of Latium, stood Tibur and Præneste; in the plain between the Sabine and Alban ranges, Gabii, Labici, and Nomentum; on or near the coast, Laurentum and Lavinium; and on the isolated hills overlooking the Tiber (the boundary between Latium and Etruria), the frontier town of Rome. How many cantons were originally in Latium. it is neither possible nor important to know. Tradition mentions 30 sovereign or politically independent communities (with Alba Longa at their head), which formed the famous Latin League. The historical order of their constitution is a point regarding which equally we are ignorant, but there is reason to believe that the Roman canton, or at least its capital, the town of Rome, was among the latest political organizations of the Latins. The history and fortunes of this canton we now proceed briefly to trace.

History of R. during the Earliest or Regal Period.—According to the myth of Romulus, R. was an offshoot from Alba Longa (for an outline of the ancient legend, see ROMULUS); but the most rational view of the city's origin is that suggested by a consideration of its site. It probably sprang into existence as a frontier-defense against the Etruscans, and as an emporium for the river-traffic of the country; but whether it was founded by a common resolve of the Latin confederacy, or by the enterprise of an individual chief, is beyond the reach even of conjecture. The precise date fixed upon for the commencement of the city, by the formation of the *Pomœrium*, viz., B.C. 753, Apr. 21 is, of course, valueless: we know and can know nothing on the point. The three 'tribes,' Ramnians, Tities, and Luceres, who appear in the Romuleian legend, as the constituent parts of the primitive commonwealth, suggest the idea that R. (like Athens) arose out of a *synoikismos* or amalgamation of three separate cantons; but Mommsen rejects as 'irrational' the common opinion that these cantons represent different races, and that the Romans were a 'mongrel people,' made up of Latins, Sabines, and Etruscans, with perhaps a dash of Hellenic and imaginary 'Pelasgic' blood in their veins. The existence of a Sabine element, represented by the Tities, is indeed admitted; but its introduction is thrown back to a period long anterior to the foundation of the city, when the Roman clans were still living in their open villages, and nothing of R. existed but its 'stronghold' on the Palatine. Nor is there anything to indicate that that element materially

THE BASILICA OF ST. PAUL'S, ROME.

affected the Latin character, language, polity, or religion of the commonwealth which was subsequently formed.

The motives which probably led to the building of R. led also to its rapid development, so that the great peculiarity of the Roman, as compared with the other Latin cantons, is the prominence which its urban life assumed in the earliest period. No doubt the Roman continued to manage his farm in the cantonal territory, but the insalubrity of the Campagna, as well as the advantages of river-traffic, and the necessity for watchfulness imposed on all frontier towns in rude ages, must ever have acted as an inducement to him to take up his residence as much as possible in the city. The consequence was that the Roman became essentially a 'citizen,' while the other Latins remained essentially 'rustics.' So markedly is this the case, that the beginnings of Roman history—if the ancient legend may be so designated—are records mainly of its urban expansion and political growth. That the Palatine Hill was the oldest portion of the city is attested by a variety of circumstances. Not only does it hold that rank in the Romulcian legend, but on it were situated the oldest civil and religious institutions. The Romulcian myth of the establishment of an asylum on the Capitoline (see CAPITOL) for homicides and runaway slaves, with all its famous consequences – the *Rape of the Sabine Women*, the wars with the Latins of Cœnina, Antemnæ, and Crustumerium, but especially with the Sabines of Cures under their king Titus Tatius, the tragic fate of Tarpeia, and the fine feminine valor of the ravished maidens, who had learned to love their captors—is historically worthless; except, perhaps, so far as it shows us how from the beginning the Roman burghers were engaged in constant feuds with their neighbors for aggrandizement of their power. The entire history of the 'regal period,' in fact, has come down to us in so mythical and legendary a form, that we cannot feel absolutely certain of the reality of a single incident. That such personages as Numa Pompilius, Tullus Hostilius, Ancus Martius, Lucius Tarquinius Priscus, Servius Tullius, and Lucius Tarquinius Superbus, ever existed, or at least if they did, that the circumstances of their lives, their institutions, their conquests, their reforms, were as the ancient narrative describes them, are things which no critical scholar can believe. The destruction of the city records by the Gauls, when they captured and burned R. B.C. 4th c., deprived the subsequent chroniclers of authentic information in regard to the past, and forced them to rely on treacherous reminiscences, on oral tradition, on ballads, and on all the multifarious fabrications of a patriotic fancy, that would naturally seek compensation for political disaster in the splendor with which it would invest its primeval history. The utmost reach, therefore, to which our knowledge can attain, is to form some general idea—mainly by inference from the institutions that we find existing in later times—of the course of social and political progress in the Roman commonwealth.

From the very beginning of the city—and probably long

before—the inhabitants were divided into two orders (exclusive of 'slaves')—viz., householders and their dependents, better known perhaps as 'patricians' [from *pater*, a father] and 'clients' [i.e., 'listeners'—from *cluere*, 'to listen']. The former alone possessed political—i.e., burgess—rights. It was they who exclusively constituted the *populus* ('the people'); while the clients had no political existence whatever. How this latter class originated we do not know, but 'superiors' and 'inferiors' exist everywhere, and there is really nothing wonderful in the phenomena, except the rigor of their political subjection. In a thriving community like the Roman, which seems to have always held a somewhat isolated and antagonistic position relative to the other Latin cantons, new-comers, such as refugees and the like, would be frequent; and these alien settlers, it is clear, never obtained (except under very special circumstances) the privileges of the original Roman families. That the clients formed a body essentially different from the *plebs* is not true, and seems based merely on the mythical account of what followed the destruction of Alba Longa by Tullus Hostilius. The name plebs [i.e., 'the multitude,' from the same root as *pleo*, I fill, *plenus*, full; with which is perhaps connected the other Latin word *vulgus*, Eng. *folk*] is doubtless, as its signification indicates, of later origin than *clientes;* but both are applicable to the same persons, who were called 'listeners' in reference to their being dependents on the different burgess-households, and the 'multitude' in reference to their want of political rights. The constitution of the state was simple. All the burgesses were politically on a footing of equality. From their own ranks was chosen the king or 'leader' (*rex*), who was therefore nothing more than an ordinary burgess—a husbandman, a trader, a warrior, set over his fellows. But it must at the same time be observed that his authority was great, for the Roman state was based on the Roman household, and something of the absoluteness of the *patria potestas* appears in the uncircumscribed nature of the regal powers. The *rex* held his office for life; he consulted the national gods; he appointed the priests and priestesses; he called out the *populus* for war, and led the army in person; his command (*imperium*) was not to be gainsaid, on which account on all official occasions he was preceded by 'messengers' or 'summoners' [*lictores*—from *licere*, 'to summon,' though commonly given from *ligo*, 'to bind'], bearing the 'fasces' (axes and rods tied up together), the symbols of power and punishment; he had the keys of the public chest, and he was supreme judge in all civil and criminal suits. The Roman religion or *cultus* was from the first thoroughly subordinate to the authority of the state; and all that we can infer from the myth of Numa is that R. perhaps owed its colleges of augurs and pontiffs to the wisdom of some enlightened sovereign who felt himself at times embarrassed in his decisions on matters of religious and public law, and recognized how valuable might be the aid afforded him by a body of sacred experts. It is certain that origi-

nally the sole power was the regal, and that the subordinate magistracies appearing at a later time arose from a delegation of regal authority, rendered necessary by ceaseless increase of state-business. 'All the officials of the earliest period,' says Mommsen (who has expounded this view with admirable sagacity in his chapter on the 'Original Constitution of Rome'), 'the extraordinary city-warden (*præfectus urbi*, who doubtless governed in the absence of the *rex*), as well as those who were probably nominated regularly, the "trackers of foul murder" (*quæstores parricidii*), and the "leaders of division" (*tribuni*, from *tribus*, part) of the infantry (*milites*) and of the cavalry (*celeres*), were mere royal commissioners, and not magistrates in the subsequent sense of the term.' On the other hand, we may believe that the *senatus*, or Council of the Elders, from its very nature, was as old an institution as the monarchy itself. Among the very first things the 'citizen-king' would do would be to choose out of the ranks of his fellow-burgesses a number of experienced men to assist him with their counsel; but it is to be observed that this body possessed no coercive or constraining powers. They gave their advice when the *rex* chose to ask it; that was all. Yet as the tenure of their office was for life, they necessarily possessed great *moral* authority; and it was only when the king, the senate, and the community were at one in regard to any important matter—a war, for example—that it was held to be righteous, and likely to be favored by the gods. The burgesses, or householders, were divided into *curiæ*—i.e., 'wardships,' connected probably with *cura* and *curare*, 'to care for,' rather than with *quiris*, and the Sabine *cures*, as Varro thinks. Ten households formed a *gens* (a 'clan' or 'family'); 10 clans, or 100 households, formed a *curia*, or wardship; and 10 wardships, or 100 clans, or 1,000 households, formed the *populus*, *civitas*, or community. But as Rome was a *synoikismos* of three cantons, the actual number of wards was 30, of clans 300, and of households 3,000. Every household had to furnish one foot-soldier [hence the name *mil-es*, the 'thousandth walker'—from *mil*, and *eo* (?), 'to go'], and every clan a horseman and a senator. Each ward was under the 'care' of a special warden (the *curio*), had a priest of its own (the *flamen curialis*), and celebrated its own festivals. None but burgesses could bear arms in defense of the state [hence their designation, *populus*, 'the warrior body,' connected with *populari*, 'to lay waste,' and *popa*, 'the priest, or priest's assistant, who felled the victim at the altar—the sacred butcher']. In the old litanies the blessing of Mars is invoked on the *pilumnus populus* ('the spear-armed warrior body'), and when the *rex* addressed them, it was by the name of *quirites* ['lancemen'—from *quiris*, or *curis*, a 'lance,' and *eo*, 'to go']. The original Roman army, or *legio* (i.e., 'the gathering'), was composed of three 'hundreds' (*centuriæ*) of horsemen (*celeres*—i.e., 'the swift,' or *flexuntes*, 'the wheelers'), under their divisional leaders (*tribuni celerum*); and three 'thousands' of footmen (*milites*), also under divisional leaders (*tribuni*

militum): to whom were added a number of light-armed skirmishers (*velites*), especially 'archers' (*arquites*). The *rex*, as we have said, was usually the general; but as the cavalry force had a colonel of its own (*magister equitum*), it is probable that the *rex* placed himself at the head of the infantry. Military service was no doubt the prime duty of the Roman burgesses, but the king could impose upon them any labors that he reckoned necessary or advantageous to the welfare of the state, such as erection of public edifices, tilling of the royal demesnes, execution of royal commissions, or the building of the city walls.

The 'foreign policy' of R. seems to have been aggressive from the first, and this character it retained as long as the aggrandizement of the state was possible. We have, it is true, no certain knowledge of the primitive struggles in which the enterprising and ambitious Roman burghers were engaged, but it appears from the legend that at a very early period the neighboring Latin communities of Antemnæ, Crustumerium, Ficulnea, Medullia, Cœnina, Cornieulum, Cameria, Collatia, were subjugated. The crisis of the Latin War, however, was undoubtedly the contest with Alba Longa, in which that 'sacred metropolis' of Latium was destroyed, and its leadership passed to the conqueror. How deadly the struggle between the two was, may be inferred from the tragic details in which the legend abounds. As a rule, on the subjugation of a canton, the conquered inhabitants were allowed to remain in their open hamlets, but their *capitolium* was razed, their weekly market, their justice-court, their gods—everything, in short, strictly national—were removed to R., while they themselves were enrolled among the clients or plebs. But sometimes the inhabitants themselves, in whole or part, were transferred to R., and individuals or clans were even received into the ranks of the Roman burgesses, as in the case of Alba Longa. Some of the famous Roman *gentes* claimed to be of Alban descent—the Julii, Servilii, Quintilii, Cloelii, Geganii, Curiatii, and Metilii. The wars with the Etruscans of Fidenæ and Veii—assigned, like the destruction of Alba Longa, to the reign of Tullus Hostilius—were apparently indecisive; those with the Rutuli and Volsci, however, were probably more fortunate; but uncertainty hangs like a thick mist over the ancient narrative. Even the story of the Tarquins, though it belongs to the later period of the monarchy, is in many of its details far from credible. Both Niebuhr and Mommsen consider 'Tarquin the Proud' a historical personage, and, without accepting literally all the circumstances of the tradition, believe the general outline—his character, his exactions, his expulsion, and his desperate efforts for the recovery of the throne—to be trustworthy. The memory of such a monarch was likely to be preserved by the very strength of the hatred that he excited, and an act so daring as his expulsion (which was at the same time the death-knell of a system of government that had prevailed for ages) could hardly be a mere invention, though it might be overlapped with fold upon fold of picturesque

fiction. The view taken by Napoleon III. (see *Histoire de Jules César*, I.), that the primitive monarchy had served its purpose, and had consequently to disappear, is perhaps not so erroneous as the oracular language of the imperial author would lead us to suppose. The aristocracy or *populus* had become so much more powerful than the individual *rex*, that they wished to possess *de jure* as well as *de facto* the supreme authority. The pride and tyranny of a Tarquin may well have aided in furthering their designs.

Meanwhile a great internal change had taken place in Rome. This is usually designated the Servian 'Reform of the Constitution,' though the expression tends to mislead. There was nothing directly political in the 'reform.' It was a reform only in the burgess-levy—i.e., in the mode of raising the army. Formerly, as we have seen, none but burgesses could bear arms in defense of the state; but the increase of the general population, caused partly by annexation of the conquered Latin communities and partly by time, had totally altered the relation in which the non-burgesses, or *plebs*, originally stood to their political superiors. The *plebs* could, of course, acquire property and wealth, and could bequeath it just as legally as the *populus;* moreover, such of the Latin settlers as were wealthy and distinguished in their own communities did not cease to be so when they were amalgamated with the Roman 'multitude.' It was therefore felt to be no longer judicious to let the military burdens fall exclusively on the old burgesses, while the rights of property were equally shared by the non-burgesses. Hence the new arrangement, known in Roman history as the formation of the *Comitia Centuriata*. When or with whom the change originated, it is impossible to say. The legend assigns it to Servius Tullius, predecessor of Tarquin the Proud; and it was the work probably of some kingly ruler who saw the necessity of reorganizing the national forces. That it cannot be regarded as a change wrought by party-zeal, is obvious when we reflect that it conferred no rights, but only imposed duties on the plebeians. Its details were briefly as follows: Every Roman freeholder from the age of 17 to 60, whether patrician or plebeian, was made liable to serve in the army; but he took his place according to the amount of his property. The freeholders were distributed into five *classes* [i.e., 'summonings'—from *calare*, to 'summon' or 'call out'], and these *classes*, all of whom were infantry, were again sub-divided into *centuriæ* (hundreds). The *first* class, which were required to possess property valued at 100,000 ases, or an entire hide of land, furnished 82 'hundreds;' the second, property valued at 75,000 ases, or $\frac{3}{4}$ of a hide of land, furnished 20 'hundreds;' the third, property valued at 50,000 ases, or $\frac{1}{2}$ hide of land, furnished 20 'hundreds;' the fourth, property valued at 25,000 ases, or $\frac{1}{4}$ hide of land, furnished 20 'hundreds;' and the fifth, property valued at 12,500 ases, or $\frac{1}{8}$ hide of land, furnished 32 'hundreds.' A single 'hundred' was, moreover, added from the ranks of the non-freeholders, or

proletarii (mere 'children-begetters'), though it is possible that from the same order came the two 'hundreds' of 'horn-blowers' (*cornicines*) and 'trumpeters' (*tibicines*), attached to the fifth class. Thus the infantry 'hundreds' amounted to 175—that is, 17,500 men, besides whom were 18 'hundreds' of *equites* ('horsemen'), chosen from the wealthiest burgesses and non-burgesses; so that the Roman army now numbered in all nearly 20,000 men. We have stated that the original design of this new arrangement was merely military, but it is easy to see that it would soon produce political results. Duties and rights are correlative: the former suggest the latter, and create a desire for their attainment. Hence the Servian military reform paved the way for the grand political struggle between the patricians and the plebeians, which began with the first year of the Republic, and ended only with its dissolution.

The Roman Republic from Its Institution to the Abolition of the Decemvirate.—1. *Internal History.*—According to the legend, the expulsion of the Tarquins was the work mainly of their cousins, Junius Brutus and Tarquinius Collatinus, in revenge for the outrage on the honor of Lucretia; and was followed by the abolition of the monarchy. The date usually assigned to this event is B.C. 509. The story is intensely tragical, and if we must consider it poetry rather than fact, yet it may safely be taken as evidence that it was unbridled lust of power and self-gratification that brought ruin on the Romano-Tuscan dynasty. Of course, we can make nothing definite out of the early years of the republic. Dates and names, and even events, must go for very little. Valerius Publicola or Poplicola, Sp. Lucretius, M. Horatius, Lars Porsenna (q.v.) of Clusium, Aulus Postumius, with the glorious stories of Horatius Cocles and the battle of Lake Regillus, will not bear scrutiny. We must content ourselves with the knowledge of historical tendencies and general results. The change from 'kings' to 'consuls' [*consules*, 'those who leap together'—more generally, those who *act* together] was intended not to diminish the administrative power of the supreme rulers, but only to deprive them of the opportunity of doing harm—of becoming Tarquins; and this it effectually did by limiting their tenure of office to a year, and by numerous other restrictions. (For an account of their original functions, and of the subsequent modifications which these underwent, see CONSUL.) It is believed to have been about this time, and in consequence of the new political changes, that the old assessors of the king, e.g., the *quæstores parricidii*, formally became established magistrates instead of mere honorary counselors, and also that the priesthood became a more self-governing and exclusive body. During the regal period the priests were appointed by the king; but now the colleges of augurs and pontiffs began themselves to fill the vacancies in their ranks; while the vestals and separate 'flamens' were nominated by the pontifical college, which chose a president (*pontifex maximus*) for the purpose. The lapse of years, ever increasing the quantity of sacred lore, increased

its importance also, and the importance of those who specially studied it; and nothing comes out more clearly in the early history of the republic than the fact that the opinions of the augurs and pontiffs became more and more legally binding. This is to be connected with the fact that in every possible way the patricians or old burgesses —now rapidly becoming a mere *noblesse*—were seeking to rise on the ruins of the monarchy, and to preserve separate institutions for the benefit of their own order, when they could only with difficulty longer exclude the *plebs* from participation in common civic privileges. In the details given us of the 'Servian Reform,' we easily discern a spirit of compromise, the concessions made to the plebeians in the constitution and powers of the *Comitia Centuriata* being partially counterbalanced by the new powers conferred on the old burgess body, the *Comitia Curiata*—viz., the right of confirming or rejecting the measures passed in the lower assembly. Toward the new assembly, therefore, the old burgess body stood somewhat in the relation in which the house of lords stands to the house of commons in Britain; but the analogy must not be pushed too far; it is only general. The character of the senate altered under the same influences. Although it never had been formally a patrician body—although admission to it under the kings was obtainable simply by the exercise of the royal prerogative, yet, practically, 299 out of the 300 senators had always been patricians; but after the institution of the republic, we are told that the blanks in the senate were filled *en masse* from the ranks of the plebeians, so that of the 300 members less than half were *patres* ('full burgesses'), while 164 were *conscripti* ('added to the roll')—hence the official designation of the senators, *patres et conscripti* ('full burgesses and enrolled').

As yet, however, it is to be observed the plebeians were rigorously excluded from the magistracies. They could vote—i.e., they could exercise legislative powers—but they had no share in the administration. None but patricians were eligible for the consulship, for the office of quæstor, or for any other executive function, while the priestly colleges rigidly closed their doors against the new burgesses. The struggle, therefore, between the two orders went on with ever-increasing violence. One point comes out very clearly from the narrative, however doubtful may be the particular details—viz., that the establishment of the republic and the reconstitution of the burgess body, instead of allaying discontent, fostered it. Power virtually passed into the hands of the capitalists; and though some of these were plebeians, yet they seem to have preferred their personal money-interests to the interests of their order, and to have co-operated with the patricians. The abuse by these capitalists of the *Ager Publicus*—that is, such portion of the land of a conquered people as had been taken from them, annexed to the Roman state, and let out originally to the patricians at a fixed rent (see AGRARIAN LAW) —together with the frightful severity of the law of debtor and creditor, whose effect was almost to ruin the small

plebeian 'farmers' who constituted, perhaps, the most numerous section of the burgesses, finally led to a great revolt of the plebs, known as the 'Secession to the Sacred Hill,' the date assigned to which is B.C. 494. On that occasion the plebeian farmer-soldiers, who had just returned from a campaign against the Volscians, marched in military order out of Rome, under their plebeian officers, to a mount near the confluence of the Anio with the Tiber, and threatened to found there a new city, if the patricians did not grant them magistrates from their own order; the result was the institution of the famous plebeian tribunate (see TRIBUNE)—a sort of rival power to the patrician *consulate*, by means of which the plebeians hoped at least to be shielded from the high-handed oppressions of the wealthy. To the same period belongs the institution of the ÆDILES (q.v.). A little later, the *Comitia Tributa* emerged into political prominence. This was really the same body of burgesses as formed the *Comitia Centuriata*, but with the important difference, that the number of votes was not in proportion to a property classification: the poor plebeian was on a footing of equality with the rich patrician; each gave his vote, and nothing more. Hence the *Comitia Tributa* became virtually a plebeian assembly, and when the *Plebiscita* ('Resolutions of the Plebs,' carried at these *comitia*) acquired (as they did by the Valerian Laws passed after the abolition of the decemvirate) a legally binding character, the victory of the 'multitude' in the sphere of legislation was complete. From this time the term *populus* practically, though not formally, loses its exclusive significance; and thenceforth, when we speak of the Roman citizens, we mean indifferently patricians and plebeians. The semi-historical traditions of this period—for we are now (B.C. 5th c.) beginning to emerge out of the mythical era—unmistakably show that the institution of the tribunate led to something very like a civil war between the two orders. Such is the real significance of the legends of Caius Marcus, surnamed *Coriolanus* (q.v.); the surprise of the Capitol by the Sabine marauder Appius Herdonius, at the head of a motley force of political outlaws, refugees, and slaves; the migrations of numerous Roman burgesses with their families to more peaceful communities; the street-fights; the assassinations of plebeian magistrates; the annihilation by the Etruscans of the Fabian *gens*, who had left Rome to escape the vengeance of their order for having passed over to the side of the plebeians; and the atrocious judicial murder of Spurius Cassius, an eminent patrician, who also had incurred the deadly hatred of his order by proposing an agrarian law that would have checked the pernicious prosperity of the capitalists and overgrown landholders. Finally, B.C. 462, a measure was brought forward by the tribune C. Terentillius Ursa, to appoint a commission of ten men to draw up a code of laws for protecting the plebeians against the arbitrary decisions of the patrician magistrates. A fierce, even a frantic opposition was offered by the patricians, and the ten years that followed were literally a period of organized anarchy in

Rome. At length the nobles gave way; and the result was the drawing up of the famous code known as the *Twelve Tables*—at first *Ten*, to which two were afterward added—the appointment of the DECEMVIRI (q.v.), and the abolition of all the ordinary magistrates, both patrician and plebeian. The government by decemvirs, however, lasted only two years; according to tradition, the occasion of its overthrow was the attempt of the principal decemvir, Appius Claudius (q.v.), to possess himself by violence of the beautiful daughter of Virginius, a Roman centurion; but the real cause was doubtless political, though the cruel lust of a Claudius may have afforded the occasion; the result of which was the restoration of the pre-decemviral state of things—the patrician consulate and the plebeian tribunate.

2. *External History.*—The external history of Rome, from the establishment of the republic to the abolition of the decemvirate, is purely military. The Romans fought incessantly with their neighbors. Long before the close of the regal period, they had acquired, as we have seen, the leadership of Latium, and in all the early wars of the republic they were assisted by their allies and kinsmen; sometimes also by other nations—e.g., the Hernicans, between whom and the Romans and Latins a league was formed by Spurius Cassius in the beginning of B.C. 5th c. The most important of these wars were those with the southern Etruscans, especially the Veientines, in which, however, the Romans made no success, and even suffered terrible disasters, of which the legend concerning the destruction of the Fabian *gens* on the Cremera, B.C. 477, may be taken as a distorted representation; the contemporaneous wars with the Volscians, in which Coriolanus is the most distinguished figure; and those with the Æqui, B.C. 458, to which belongs the fine legend of Cincinnatus (q.v.).

From the Abolition of the Decemvirate to the Defeat of the Samnites, and the Subjugation of all the 'Italians' (B.C. 449–265).—1. *Internal History.*—The leading political features of this period are the equalization of the two orders, and the growth of the new aristocracy of capitalists. After the abolition of the decemvirate, it seems—judging from the course of events—that the whole of the plebeian aristocracy, senators and capitalists (from motives of selfish aggrandizement), combined with the 'masses' of their order to make a series of grand attacks on the privileges of the old Roman *noblesse*. The struggle lasted 100 years; and ended, as only it could end, by the removal of all the social and political disabilities under which the plebeians had labored—though the stratagems and artifices to which the old aristocracy had recourse proved the reluctance with which they succumbed to fate. First, B.C. 445, only four years after the fall of the decemvirs was carried, the *Lex Canuleia* was passed, enacting that marriage between a patrician and plebeian should be legally valid. At the same time, a compromise was effected with respect to the consulship: instead of two patrician consuls, it was agreed that the supreme power should be intrusted to new officers

termed 'Military Tribunes with Consular Power,' who might be chosen equally from the patricians or plebeians. Ten years later, B.C. 435, the patricians tried to render the new office of less consequence by transference of several of the functions hitherto exercised by consuls to two special patrician officers named *Censors* (q.v.). The 'censorship,' Mommsen remarks, 'gradually became the palladium of the aristocratic party, less on account of its financial influence, than for the sake of the right annexed to it of filling vacancies in the senate and in the equites.' B.C. 421 the quæstorship (see QUÆSTOR) was thrown open to the plebeians; B.C. 368 the mastership of the horse; B.C. 356 the dictatorship (see DICTATOR); B.C. 351 the censorship; B.C. 337 the pretorship (see PRETOR); and B.C. 300 the pontifical and augurial colleges. These victories were not all won without shedding of blood. How great was the exasperation of the patricians may be estimated from the story of Spurius Maelius, the rich plebeian, who was murdered simply because in a season of famine he sold corn at a very low price to the poor.

The only effect, it is to be observed, of these political changes was to increase the power of the rich plebeians; consequently, the social distress continued as before. No genuine national concord was possible so long as *that* remained unmitigated. Efforts were repeatedly made by individuals to remedy the evil, but without success. Such were the attempts of the tribunes Spurius Mæcilius and Spurius Metilius (B.C. 417) to revive the agrarian law of Spurius Cassius; and of the noble and patriotic patrician Marcus Manlius, who, though he had saved the Capitol during the terrible Gallic siege, was hurled from the Tarpeian Rock B.C. 384, on the customary charge, as groundless in his case as it was base, of aspiring to the monarchy; but at length, B.C. 367, after a furious struggle of 11 years, the famous Licinian Rogations (see AGRARIAN LAW) were carried, by means of which it was hoped that an end had been put to the disastrous dissensions of the orders. Thus, at least, we interpret the act of the dictator Camillus, who raised a temple to the goddess *Concord*, at the foot of the Capitol.

That these laws operated beneficially on the class in whose interest they were passed, viz., the plebeian farmers or middle class of the Roman state, is unquestionable; but events showed them inadequate to remedy the evil, and after a time they ceased to be strictly enforced. On the other hand, there can be as little doubt that, owing partly to these changes, and still more to the splendid and far-reaching conquests achieved in Italy during this period of internal strife by the Roman arms, the position of the plebeian farmer was decidedly raised. Not only were the 'general coffers filled' by the revenue drawn directly or indirectly from the subjugated lands, so that a *tributum* (a forced loan) seldom required to be enforced at home, but the numerous colonies which R. now began to send forth to secure her new acquisitions consisted entirely of the poorer plebeians, who always received a portion of the

land in the district where they were settled. The long struggle between the two orders was thus virtually at an end; but the date usually assigned to the termination of the strife is B.C. 286, when the *Lex Hortensia* was passed, which confirmed the Publilian Laws of B.C. 339, and definitely gave to the *Plebiscita*, passed at the Comitia of the Tribes, the full power of laws binding on the whole nation. Gradually, however, by steps which we have not room to trace, the importance of the popular assemblies declined, and that of the senate rose. This was due mainly to the ever-increasing magnitude of the Roman state, and to the consequent necessity of a powerful governing body. The senate, it will be remembered, originally possessed no administrative power at all, but now it commenced a series of vast usurpations whose best defense is that they excited no opposition among the community. Every matter of general importance—war, peace, alliances, founding of colonies, assignment of lands, building, the whole system of finance—came under its supervision and authority. Nor, on the whole, did it prove itself the unworthy arbiter of a nation's destinies. It was not a self-elected oligarchy, but was rather composed of the ablest representatives of both orders.

2. *External History.*—We have said that the military successes of Rome during this period of internal strife were great; but we can only briefly allude to them. The irruption of the Gauls into sub-Apennine Italy B.C. 391, though accompanied by frightful devastations, was barren of results, and did not materially affect the progress of Roman conquest. No doubt the battle on the Allia, and the capture and burning of Rome B.C. 390, were great disasters, but the injury was temporary. The vigilance of Manlius saved the Capitol, and the heroism of Camillus revived the courage and spirit of the citizens. Again and again in the course of B.C. 4th c., the Gallic hordes repeated their incursions into central Italy, but never again returned victorious. B.C. 367 Camillus defeated them at Alba; B.C. 360 they were routed at the Colline Gate; B.C. 358 by the dictator G. Sulpicius Peticus; and B.C. 350 by Lucius Furius Camillus. Meanwhile the Romans, aided by their allies, the Latins and the Hernicans, carried on the long and desperate struggle with the Æquians, Volscians, and Etruscans. Finally, but not till they had sustained repeated defeats, the Romans triumphed. The causes that led to the decline of the Etruscan power, which, at the close of the regal period in R., and during the infancy of the republic, had been enormous, both by sea and land, cannot be considered at length here. Suffice it to say, that the terrible irruption of the Gallic barbarians into Etruria, and the victories of the Samnites in Campania, where also the Etruscans had established themselves, as well as the miserable jealousies of the different cities, combined to paralyze the power of this people, and paved the way for the final triumph of Rome. But even before the Gauls had crossed the Apennines, the fate of Etruria was virtually sealed. The fall of Veii (q.v.), B.C. 396, was really the death-knell of

Etruscan independence. Although the story has undoubtedly descended to us in a mythical dress, the siege of Veii is not to be placed in the same category with the siege of Troy, albeit, like it, it is said to have lasted ten years. Falerii, Capena, and Volsinii—all sovereign cities of Etruria—hastened to make peace, and by the middle of B.C. 4th c. the whole of southern Etruria had submitted to the supremacy of Rome, was kept in check by Roman garrisons, and was denationalized by the influx of Roman colonists. In the land of the Volsci, likewise, a series of Roman fortresses was erected to overawe the native inhabitants—Velitræ, on the borders of Latium, as far back as B.C. 492, Suessa Pometia B.C. 442, Circeii B.C. 303, Satricum B.C 385, and Setia B.C. 382: besides, the whole Volscian district, known as the Pontine Marshes (q.v.), was distributed into farm-allotments among the plebeian soldiery. Becoming alarmed, however, at the increasing power of Rome, the Latins and Hernicans withdrew from the league, and a severe and protracted struggle took place between them and their former ally. Nearly 30 years elapsed before the Romans succeeded in crushing the malcontents, and restoring the league of Spurius Cassius. In the course of this war, the old Latin confederacy of the 'Thirty Cities' was broken up B.C. 384, probably as being dangerous to the hegemony (now rapidly becoming a supremacy) of Rome; and their constitutions were more and more assimilated to the Roman. The terms of the treaty made by the Romans, B.C. 348, with the Carthaginians, show how very dependent was the position of the Latin cities. Meanwhile, the Romans had pushed their garrisons as far south as the Liris, the n. boundary of Campania. Here they came into contact with the Samnites (q.v.), a people as heroic as themselves, their equals in everything but unity of political organization; perhaps their superiors in magnanimity.

The Samnites had long been extending their conquests in s. Italy as R. had in the centre and in Etruria. Descending from their native mountains between the plains of Apulia and Campania, they had overrun the lower part of the peninsula, and under the name of Lucanians, Brutians, etc., had firmly established themselves, threatening everywhere the prosperity of the Greek and Etruscan possessions in those regions. But it was the dwellers in the original mountain territory who properly bore the name of Samnites, and between them and the Romans now began a tremendous struggle; the former fighting heroically for preservation of their national freedom—the latter warring with superb though almost demoniac valor for dominion. We cannot afford space to recount the circumstances that brought the collision, further than to state that the Samnite colonies had in the course of time become so detached in sympathy, and so changed in character and interests, from the parent stock, as almost to forget their original unity. Hence, hostilities were common between them; and the forays of the Samnite highlanders in the rich lowlands of Campania were dreaded above all things by their more polished but degenerate kinsmen of Capua, who had acquired

the luxurious habits of the Greeks and Etruscans. It was really to save themselves from these destructive forays that the Campanians offered to place themselves under the supremacy of Rome; thus Romans and Samnites were thrown into direct antagonism. The Samnite wars, of which three are reckoned, extended over 53 years, B.C. 343–290. The second, generally known as the 'Great Samnite War,' lasted 22 years, B.C. 326–304. At first, the success was mainly on the side of the Samnites; and after the disaster at the *Caudine Forks* (q.v.), it seemed as if Samnium and not Rome was destined to become the ruler of Italy; but the military genius of the Roman consul, Quintus Fabius Rullianus (see FABIUS), triumphed over every danger, and rendered all the heroism of Caius Pontius, the Samnite leader, unavailing. B.C. 304 Bovianum, capital of Samnium, was stormed, and the hardy highlanders were compelled to acknowledge the supremacy of the republic. The third war, B.C. 298–290, was conducted with all the sanguinary energy of despair; but though the Etruscans and Umbrians now joined the Samnites against the Romans, their help came too late. The victory of Rullianus and of P. Decius Mus, at Sentinum B.C. 295, virtually ended the struggle, and placed the whole Italian peninsula at the mercy of the victor. It only remains to be mentioned that at the close of the first Samnite war, which was quite indecisive, an insurrection burst out among the Latins and Volscians, and spread over the whole territory of these two nations; but the defeat inflicted on the insurgents at Trifanum B.C. 340, by the Roman consul, Titus Manlius Imperiosus Torquatus, almost instantly crushed it, and in two years the last spark of rebellion was extinguished. The famous Latin League was now dissolved; many of the towns lost their independence, and became Roman *municipia;* new colonies were planted both on the coast and in the interior of the Latino-Volscian region; and finally, so numerous were the farm-allotments to Roman burgesses, that two additional tribes had to be constituted.

From the Close of the Samnite to the Commencement of the Punic Wars.—The war with Pyrrhus (q.v.), King of Epirus, which led to the complete subjugation of Peninsular Italy, is a sort of pendant to the great Samnite struggle. It was brought about in this way: The Lucanians and Bruttians, who had aided the Romans in the Samnite wars, considering themselves cheated of their portion of the spoil, entered into negotiations with the enemies of their former associate throughout the peninsula. A mighty coalition was immediately formed against Rome, consisting of Etruscans, Umbrians, and Gauls in the north, and of Lucanians, Bruttians, and Samnites in the south, with a sort of tacit understanding on the part of the Tarentines that they would render assistance after a time. The rapidity with which it took shape shows alike the fear and the hatred inspired by the Roman name. In a single year the whole north was in arms, and once more the power and even the existence of Rome, were in deadly peril. An entire Roman army of 13,000 men was annihilated at Aretium B.C. 284 by the

Senonian Gauls; but that dauntless spirit which the republic never failed to display in the crisis of its fortunes, and which gives grandeur to its worst ambition, now shone out in the fulness of its splendor. Publius Cornelius Dolabella marched into the country of the Senones at the head of a large force, and literally extirpated the whole nation, which thenceforth disappeared from history. Shortly afterward, the bloody overthrow of the Etrusco Boian horde at Lake Vadimo, B.C. 283, shattered to pieces the northern confederacy, and left the Romans free to deal with their adversaries in the south. The Lucanians were quickly overpowered B.C. 282; Samnium, broken by its long and luckless struggle, and overawed by the proximity of a Roman army, could do nothing. A rash and unprovoked attack on a small Roman fleet now brought down on the Tarentines the vengeance of Rome, at the very moment when Rome was free to exert all her terrible power. Awaking to a sense of their danger, the Tarentines invited Pyrrhus (q.v.) over from Epirus, and appointed him commander of their mercenaries. This royal adventurer a man of most brilliant, but also of most volatile genius, resembling no modern general so much as Charles Mordaunt, Earl of Peterborough, arrived in Italy B.C. 280 with a small army of his own and a vague notion in his head of founding a Hellenic empire in the West, that should rival that created in the East by his kinsman, Alexander the Great. It is not necessary to narrate here the varying fortunes of the struggle between Pyrrhus and the Romans, which lasted only six years, and ended in his return to Epirus without accomplishing anything.

After Pyrrhus, baffled in his attempts to check the progress of Rome, had withdrawn to Greece, the Lucanians and Samnites, whom his reputation and original successes had induced to rise once more against the dreaded foe, continued the unequal struggle, but 'even the bravery of despair,' as it has been said, 'comes to an end; the sword and the gibbet at length (B.C. 269) carried peace even into the mountains of Samnium.' Tarentum had surrendered three years earlier; and now from the Macra and the Rubicon to the Strait of Messina, there was not a nation in Italy that did not acknowledge the supremacy of Rome. Distant kingdoms began to feel that a new power had risen in the world; and when Ptolemy Philadelphus, sovereign of Egypt, heard of the overthrow of the famous Epirote warrior, he sent an embassy to Rome B.C. 273, and concluded a treaty with the republic. To secure their new acquisitions, the Romans established in the south military colonies at Pæstum and Cosa, in Lucania, B.C. 273; at Beneventum B.C. 268, and at Æsernia B.C. 263, to overawe the Samnites; and in the north, as outposts against the Gauls, Ariminum B.C. 268, Firmum, in Picenum B.C. 264, and the burgess colony of Castrum Novum. Preparations were also made to carry the great Appian highway as far as Brundisium, on the Adriatic, and for colonization of the latter city as a rival emporium to Tarentum.

The political changes were almost as important as the

military. The whole population of Peninsula Italy was divided into three classes—1. *Cives Romani*, or such as enjoyed the full burgess privileges of Roman citizens; 2. *Nomen Latinum*—i.e., such as possessed the same privileges as had pertained to the members of the quondam Latin League—viz., an equality with the Roman burgesses in matters of trade and inheritance, the privilege of self-government, but no participation in the Roman franchise, and consequently no power to modify the foreign policy of the state; 3. *Socii*, or 'Allies,' to some of whom were conceded most liberal privileges, while others were governed in almost despotic fashion. The *Cives Romani* no longer embraced merely the inhabitants of the old Roman community, the well-known 'tribes' (of which there were now 33), but all the old burgess-colonies planted in Etruria and Campania, besides such Sabine, Volscian, and other communities as had been received into the burgess body on account of their proved fidelity in times of trial, together with individual Roman emigrants or families of such, scattered among the *municipia*, or living in villages by themselves. The cities possessing the *Latinum Nomen* included most of the 'colonies' sent out by Rome in later times, not only in Italy, but even beyond it; the members of which, if they had previously possessed the Roman franchise, voluntarily surrendered it instead of an allotment of land. But any 'Latin' burgess who had held a magistracy in his native town might return to Rome, be enrolled in one of the tribes, and vote like any other citizen. The *Socii* comprised all the rest of Italy, as the Hernicans, the Lucanians, the Bruttians, the Greek cities, etc. All national or cantonal confederacies and alliances among the Italians were broken up, and no means were left unemployed by the victors to prevent their restoration.

The Punic Wars.—For the origin of Carthage, and the steps by which she rose to power, see CARTHAGE. At the time when Carthage came into collision with Rome, she was indisputably the first maritime empire in the world, ruling as absolutely in the central and western Mediterranean Sea as Rome in the Italian peninsula. Between the Carthaginians and the Romans there had long existed a nominal alliance—the oldest treaty dating as far back as B.C. 6th c. But this alliance had never had any real significance, and latterly the two nations had come to regard each other with distrust. The incident that occasioned the outbreak was trivial: suffice it to say that B.C. 264 war was formally declared between the two nations, and incomparably the most terrible contest in which Rome was ever engaged began.

Not following minutely the course of the famous Punic wars (for whose details—see CARTHAGE: HAMILCAR: HANNIBAL: HASDRUBAL: HIERO: REGULUS: METELLUS: FABIUS: MARCELLUS: SCIPIO: NUMIDIA), we briefly indicate their character and result. The wars with Carthage, like those with Samnium, were three in number. The *first* lasted 23 years (B.C. 264–241), and was waged mainly for the possession of Sicily. Its leading feature was the crea-

tion of a Roman navy, which, after repeated and tremendous misfortune, finally wrested from Carthage the sovereignty of the seas. Rome indeed had never been a merely agricultural state, as may be inferred from a variety of particulars—e.g., the antiquity of the galley in the city arms, of the port-dues on the exports and imports of Ostia, and of commercial treaties with transmarine states—but events had hindered it from engaging largely in maritime enterprise; and its shipping, at least its fleet, was still insignificant, though it had become master of nearly all the Italian seaboard. The necessity for a navy now began to show itself. Not only was there a difficulty felt in transporting troops to Sicily, but the shores of the mainland were completely exposed to the ravages of Carthaginian squadrons. So energetically did the senate set to work, that (we are told) in 60 days from the time the trees were felled, 120 ships were launched; and soon afterward the consul Caius Duilius gained a brilliant success B.C. 260 over the Carthaginians off Mylæ, on the n.e. coast of Sicily. The exultation of the Romans knew no bounds; and the 'triumph' which Duilius received, on his return to the city, had the aspect more of a carnival than of a noble ceremony. The *Columna Rostrata* ('Beaked Column') in the Forum preserved for ages the memory of the 'glorious victory.' Subsequent events, however, were less favorable. An invasion of Africa by Regulus (q.v.) ended in disaster, and the war, thenceforth confined to Sicily, miserably languished. Thrice was the Roman navy annihilated by storms at sea (B.C. 255, 253, and 249); and in spite of a series of unimportant successes by land, the Romans long found it impossible to make any impression on the great Carthaginian strongholds of Lilybæum and Drepanum, mainly because of the brilliant strategy with which they were held in check by Hamilcar Barca, father of Hannibal. At last, however, in a great sea-fight off the Ægates Isles (B.C. 242), a Roman fleet commanded by the consul Lutatius Catulus obtained a magnificent victory. The Carthaginian government, whose treasury was empty, and who had in vain tried to raise a state-loan in Egypt, could—for the present—continue the struggle no longer, and the whole of Sicily, except the territory of Hiero of Syracuse, who had been a firm ally of the Romans, passed into the hands of the victors, who constituted it a Roman province, and placed it under the government of a pretor.—A lapse of 23 years occurred before the second Punic war began, but during that interval neither Romans nor Carthaginians had been idle. Rome, with worse than 'Punic faith,' had bullied its weak and exhausted rival into surrendering Sardinia and Corsica, which, like Sicily, were transformed into a Roman province. In addition, the Romans had carried on a series of Gallic wars in n. Italy (B.C. 231–222) whose result was the complete humiliation of the barbarian Boii, Insubres, etc., and the extension of Italy to its natural boundary—the Alps. On the e. coast of the Adriatic also, the Romans made their power felt, by the vigor with which they suppressed Illyrian piracy (B.C.

219). Meanwhile, the descent of Hamilcar on the Spanish coast was followed, after some ineffectual opposition from the natives, by the establishment of a new Carthaginian empire, or at least a protectorate, in the West; and thus, almost before the Romans were aware of it, their hated rival had made good her losses again, and was even able to renew the struggle in more daring fashion than before. How confident the bearing of the Carthaginians had become, may be seen from the fearless spirit in which they accepted the Roman challenge, and entered on the *second* Punic —or (as the Romans called it) the *Hannibalic*—war, whose grand events were the crossing of the Alps by Hannibal, the terrible disasters of the Romans at Lake Trasimene (q.v.) and Cannæ (q.v.), and the final overthrow of Hannibal at Zama (q.v.), B.C. 202, by Scipio, which once more compelled the Carthaginians to sue for peace. It was with Carthage as with Samnium. The *second* war virtually sealed her fate, and the *third* displayed only the frantic heroism of despair. Her Spanish possessions, like her Sicilian, passed to the Romans (who formed out of them the provinces *Hispania Citerior* and *Hispania Ulterior*); so did her protectorate over the Numidian sheiks. She was forced to surrender her whole navy (excepting ten triremes), and all her elephants, and to solemnly swear never to make war either in Africa or abroad, except with consent of her vanquisher. In a word, the imperial supremacy of Rome was now as unconditional in the w. Mediterranean as on the mainland of Italy. Her relations, indeed, to the conquered Italian nationalities became much harsher than they had formerly been; for, after the first victories of Hannibal, these had risen against her. The Picentes, Bruttii, Apulians, and Samnites were deprived either of the whole or the greater part of their lands—some communities were actually turned into serfs—the Greek cities in Lower Italy, most of which also had sided with Hannibal, became the seats of burgess-colonies. But the loss of life and of vital prosperity was frightful. 'Numbers of flourishing townships,' says Mommsen, '400, it was reckoned, were destroyed and ruined.' Slaves and desperadoes associated themselves in robber-bands, of the dangers of which an idea may be formed from the fact that in a single year, B.C. 185, 7,000 men had to be condemned for robbery in Apulia alone; the extension of the pastures, with their half-savage slave-herdsmen, favored this mischievous barbarizing of the land. But the exultation of victory closed the eyes and the ears of the Romans against every omen, and the perilous work of conquest and subjugation went on. B.C. 201–196, the Celts in the valley of the Po, who, with the fiery unwisdom of their race, had recommenced hostilities at the very moment Rome was freed from her embarrassments, were thoroughly subjugated; their territory was Latinized, but they themselves were declared incapable of ever acquiring Roman citizenship; and so rapidly did their nationality dissolve, that when Polybius, only 30 years later, visited the country, nearly all traces of Celtic characteristics had disappeared.

The Boii were finally extirpated about B.C. 193; the Ligurians were subdued B.C. 180–177; and the interior of Corsica and Sardinia about the same time. The wars in Spain were troublesome and of longer duration, but they were not serious. The natives were indeed perpetually in arms, and the Romans suffered frequent defeats from their sudden and impetuous insurrections; but in the end the superior discipline of the legions always prevailed, and the fiery and chivalrous tribes had to make ignominious submission. So little reliance, however, could be placed on these forced submissions, that the Romans felt it necessary to hold Spain by military occupation; hence arose the first Roman standing armies, and 40,000 troops were maintained in the Spanish peninsula year after year. The most distinguished successes were those achieved by Scipio himself, by Quintus Minucius B.C. 197–196, by Marcus Cato B.C. 195, by Lucius Æmilius Paulus B.C. 189, by Caius Calpurnius B.C. 185, by Quintus Fulvius Flaccus B.C. 181, and by Tiberius Gracchus B.C. 179–178.

Macedonian and Greek Wars.—The causes that led to the interference of R. in the politics of the East are too complicated to be given here, but the *Macedonian wars* resulted immediately from the alliance formed by Philip V. of Macedon with Hannibal after the battle of Cannæ. Like the Samnite and Punic, the Macedonian wars were three in number. The *first*, B.C. 214–205, was barren of results, mainly because the whole energies of Rome were directed to Spain and lower Italy; but the *second*, B.C. 200–197, though it lasted only a third of the time occupied by the first, taught Philip that another, and not he, must rule in Greece. The battle of *Cynoscephalæ* ('Dogs' Heads' Hills, a range in Thessaly) was followed by a treaty which compelled him to withdraw his garrisons from the Greek cities, to surrender his fleet, and to pay 1,000 talents toward the expenses of the war. Philip was thoroughly quelled, and, during the remaining 18 years of his life, he adhered (like old Hiero of Syracuse, though less sincerely) to his Roman alliance. But the miserable Ætolians, who had formed an alliance with Rome against Philip, with even more stupidity than insolence, quarrelled in wanton jealousy with their powerful 'friends,' and persuaded Antiochus (q.v.) of Syria to come over seas to Thessaly, and fight them. A similar fate befell him to what had befallen Philip. After a war of three years, he found himself compelled to surrender all his possessions in Europe and Asia Minor, all his elephants and ships, and to pay 15,000 Euboic talents ($18,300,000) within 12 years. Next year the Ætolians were crushed, and, a little later, the despicable quarrels between the Achaians and Spartans led to a general Roman protectorate over the whole of Greece.

Philip V. of Macedon, dying B.C. 179, was succeeded on the throne by his eldest son, Perseus (q.v.), who resolved once more to try the fortune of war with the Romans; and B.C. 172 the *third* and *last* Macedonian war began, whose

consul Lucius Æmilius Paulus (q.v.), the capture of the king, who adorned the triumph of the conqueror, and the dismemberment of the Macedonian empire, which was broken up into four oligarchic republics, the members of which were subjected to severe disqualifications; while in Greece itself, trials and executions for implication in the war of Perseus spread terror everywhere; the conspicuous 'patriots'—i.e., all who had made themselves notorious by their anti-Roman and Macedonian policy—were deported to Italy; further, the imperial republic stopped Antiochus Epiphanes in his career of Egytian conquest, ordered him instantly to abandon his acquisitions, and accepted the protectorate of Egypt, which the grateful and frightened monarch offered to Rome B.C. 168. Even the allies of Rome—the Pergamese, the Rhodians, etc.—were treated with shocking harshness and injustice. We may here, for the sake of connection, anticipate the course of history, and mention the last *Greek* and *Punic* wars. Both of these came to an end in the same year, B.C. 146. The former was caused by an expiring outburst of pseudo-patriotism in the Achaian League, consequent on the return of the exiles from Rome, and was virtually closed on the siege and destruction of Corinth (q.v.) by the consul Mummius. The latter was not so much a war as a bloody sacrifice to the genius of Roman ambition. After Hannibal's death, his party in Carthage seems to have recovered the ascendency, and as, coincident therewith, the commercial prosperity of the city began to revive, a bolder front was shown in resisting the encroachments of Masinissa, the Numidian ruler, whom the Roman senate protected and encouraged in his aggressions. This was enough. Fierce old Cato only expressed the instinctive sentiment of the Roman burgesses when he came to utter incessantly *Delenda est Carthago*, and B.C. 149 the senate adopted his barbarous conviction. After a siege of three years, in which the inhabitants showed superhuman energy and heroism, Carthage was stormed by Scipio Africanus Minor, and the Carthaginian empire vanished forever from the earth.

Position of Rome at the Close of the Punic Wars, and Sketch of Its Subsequent Social Condition to the Termination of the Republic.—'Polybius dates from the battle of Pydna the full establishment of the universal empire of Rome. It was in fact the last battle in which a civilized state confronted Rome in the field on a footing of equality with her as a great power; all subsequent struggles were rebellions or wars with peoples beyond the pale of the Romano-Greek civilization—the barbarians, as they were called. The whole civilized world thenceforth recognized in the Roman senate the supreme tribunal, whose commissioners decided in the last resort between kings and nations; and, to acquire its language and manners, foreign princes and noble youths resided in Rome.' But contemporaneous with this enormous extension of power and authority in foreign lands, the national character underwent complete and fatal alteration. The simplicity and stern integrity of life, the religious gravity of deportment, and the fidelity with

which common civic and household duties were discharged —well expressed in the saying of Cato, that it was 'better to be a good husband than a great senator'—which in early times nobly distinguished the Roman burgess, had now nearly disappeared. Those hardy virtues—frugality, temperance, justice, and rectitude—which, combined with courage and energy, had given the strength to the nation that made it great, required for their permanence the social conditions out of which they sprang. But the class of peasant proprietors who had laid the foundations of Roman greatness were either extinct or no longer what they had been. The original causes of their social degradation have been already noticed, and here it is necessary to say only that the victories of R. abroad furthered rather than retarded that degradation. The long and distant wars made it more and more impossible for the soldier to be a good citizen or a successful farmer. The freedom and licentiousness of camp-life, the sweets of pillage and rapine, ever grew more pleasant to the Italian burgess and colonist; thus indolence, inaptitude, and spendthrift habits aided the greedy designs of the capitalists, and in most cases the paternal acres gradually slipped into the possession of the great landlords, who found it more profitable to turn them into pasture or cultivate them by gangs of slaves. The rise of the slave-system—though an inevitable result of foreign conquest—was, indeed, the most horrible curse that ever fell on ancient Rome, and the atrocities inflicted on its unhappy victims are far beyond the possibility of description; Mommsen does not exaggerate when he considers it probable that 'compared with the sufferings of the Roman slaves, the sum of all negro suffering is but a drop.' If the Italian farmer honorably strove to retain his small farm, he was exposed to the competition of the capitalists who shipped immense quantities of corn from Egypt and other granaries, where slave-labor rendered its production cheap, and of course he failed in the unequal struggle. Not less pernicious was the change that passed over the character of the rich. We have already shown how the old Roman patricians lost their exclusive privileges, how the plebeians gradually acquired full equality with them, and how the germs of a new social aristocracy originated, based on wealth rather than pedigree, and comprising both plebeians and patricians. During the 4th and 3d c. B.C., the political power of this order immensely increased: in fact, the whole government of the state passed into their hands. They became an oligarchy, and, while it is not to be denied that they displayed extraordinary ability in the conduct of foreign affairs, the vices inseparable from oligarchic rule—selfishness, nepotism, and arrogance, of which Scipio is a striking example—gradually became rampant. Regarding themselves as the Roman community *par excellence*, and the poor burgesses as a mere *canaille*, whose wishes and interests were unworthy of a moment's consideration, they virtually relapsed into the exclusiveness of the ancient *populus*, with this difference for the worse, that their wealth, influence, and pride were a thousand-

fold greater than those of Coriolanus or Camillus. But far worse than even the nepotism and selfishness of the nobles was their ever-increasing luxury and immorality. When Rome had conquered Greece, and Syria, and Asia Minor, the days of her true greatness were ended. The wealth that poured into the state coffers, thence to be (really, if not formally) distributed among the clique of nobles, the treasures which victorious generals acquired, enabled them to gratify to the full the morbid appetites for pleasure engendered by exposure to the voluptuousness of the East. Such results were, it is true, not brought about in a day, nor without resolute protest on the part of individual Romans. The attitude of Cato Major toward the Hellenizing tendencies of his brother nobles was doubtless patriotic, and posterity has been generous in its laudation of his antique virtue; but Cato Major was nevertheless only a political fanatic and incarnate anachronism. So long as Rome chose to subdue foreign nations, and to hold them by the demoralizing tenure of conquest—i.e., as mere *provinces*, whose inhabitants, held in check by a fierce and unscrupulous soldiery (like the Kabyles of Algeria by the French, or, until recently, the Hindus by the British), neither possessed political privileges nor dared cherish the hope of them—it was morally impossible for the citizens, either at home or abroad, to resume the simple and frugal habits of their forefathers. After Cato's time, things grew worse instead of better; nor from that period, down to the final dissolution of the empire, was a single *radical* reform ever permanently effected. The momentary success of Tiberius, and of his far abler brother, Caius Gracchus (q.v.), in their desperate and revolutionary attempts to prevent the social ruin of the state, by breaking down the powers of the senate, redistributing the domain lands, reorganizing the administration, and partially restoring the legislative authority of the popular assemblies, hardly survived their death; and the reaction that ensued proved that the senate, like the Bourbons, could learn nothing from adversity, and that the rabble of the city were incapable of elevation or generosity of political sentiment. Henceforth, the malversation of the public money by pretors and quæstors became chronic, and the moral debauchery of the mob of the capital, by the largesses of ambitious politicians and the vile flattery of demagogues, complete. The old Roman faith, so strong and stern, disappeared from the heart. The priests became Pharisees, the nobles 'philosophers' (i.e., unbelievers), their wives practicers of oriental abominations under the name of 'mysteries;' while the poor looked on with unmeaning yet superstitious wonder at the hollow but pompous ceremonies of religion. It would serve no useful purpose to dwell longer on these aspects of Roman society, and we turn to sketch in a few words the course of outward events to the close of the republic.

From the Destruction of Carthage to the Termination of the Republic.—We have already alluded to the wars waged in Spain during the first half of the 2d c. B.C. The humane and conciliatory policy pursued toward the natives

by Tiberius Sempronius Gracchus, father of the ill-fated tribunes, brought about a peace B.C. 179 that lasted 25 years; but B.C. 153 a general rising of the Celtiberians took place, followed by another on the part of the Lusitanians of Portugal. The struggle maintained by these gallant barbarians against their mighty oppressor lasted, with intervals of peace, for 20 years; but ended, in spite of gleams of brilliant success, as such contests invariably do, in the final overthrow of the undisciplined and uncivilized combatant. All the valor of the shepherd-warrior Viriathus (q.v.), even if the assassin's steel had spared his life, would not have prevented the annexation of Lusitania to the Roman empire, nor did the unsurpassable heroism of the besieged Numantines avail to baffle the military skill of the younger Scipio.

Toward the conclusion of the Numantine war occurred the first of those horrible social outbreaks known as 'servile' or 'slave' wars, which marked the later ages of the republic. The condition of the slaves has been already referred to; but what aggravated the wretchedness of their lot was the fact that most of them had been originally freemen—not inferior in knowledge, skill, or accomplishments to their masters, but only in force of character and military prowess. The first slave insurrection broke out in Sicily B.C. 134, where the system was seen at its worst. Its leader was one Eunus, a Syrian, who, mimicking his native monarch, took the title of King Antiochus. The suddenness and barbaric fury of the revolt for a time rendered all opposition impossible. The slaves overran the island, like demoniacs let loose; and routed one Roman army after another. But a slave insurrection has no aim beyond immediate revenge, and when the first wild paroxysms of ferocity are over, it becomes powerless, more even from a moral than a physical exhaustion, and can be quelled with ease. B.C. 132 the consul Publius Rupilius restored 'order' in the island. In the East, fortune continued to smile upon the Roman arms. Attalus III., Philometor, a villainous despot of the true oriental stamp, who massacred or poisoned every one that ventured to give him advice, dying B.C. 133, bequeathed his client-kingdom of Pergamus to its protector—Rome; and after a fierce struggle with an ambitious pretender called Aristonicus, the Romans obtained possession of the splendid bequest, and formed it into the province of Asia, B.C. 129.

We may here enumerate the different provinces into which the Roman senate divided its foreign conquests, in the order of their organization: 1. Sicily, B.C. 241; 2. Sardinia and Corsica, B.C. 238; 3. Hispania Citerior, and 4. Hispania Ulterior, B.C. 205; 5. Gallia Cisalpina, B.C. 191; 6. Macedonia, B.C. 146; 7. Illyricum, about B.C. 146; 8. Achaia (or southern Greece), about B.C. 146; 9. Africa (i.e., the Carthaginian territory), B.C. 146; 10. Asia (kingdom of Pergamus), B.C. 129. A few years later, B.C. 118, an 11th was added by the conquest of the southern part of Transalpine Gaul, and was commonly called, to distin-

guish it from the rest of the country, 'the Province;' hence the modern *Provence*.

In Africa the overthrow of Jugurtha (q.v.), B.C. 104, by the consul Marius, added yet further to the military renown and strength of the republic. Meanwhile, from a new quarter of the world a gigantic and unforeseen danger threatened the Roman state. North of the Alps there had long been roaming in the region of the middle Danube an unsettled people called the CIMBRI (q.v.), whose original home was probably n.w. Germany. They came into collision with the Romans first in Noricum, B.C. 113; after which they turned westward, and poured through the Helvetian valleys into Gaul, where they overwhelmed alike the native tribes and the Roman armies. At Arausio (Orange), on the Rhone, B.C. 105, a Roman army of 80,000 was annihilated; but instead of invading Italy, the barbarians blindly rushed through the passes of the Pyrenees, wasted precious months in contests with natives tribes of Spain as valiant and hardy as themselves, and gave the Romans time to recover from the effects of their terrible defeat. Marius, who had just returned from his Numidian victories, was reappointed consul; and at Aquæ Sextiæ (Aix, in Dauphiné), he literally exterminated the dreaded foe, B.C. 102. Next year, near Milan, the same doom befell another northern horde—the Teutones, who had accompanied the Cimbri in their irruption into Spain, but on their withdrawal had parted from their associates in Gaul, forced their way back through Switzerland, and descended into Italy by the Tyrolese valleys. In the same year a second insurrection of the slaves in Sicily, which had reached an alarming height, was suppressed by the consul Marcius Aquillius.

For the next 10 years the internal history of Rome is a scene of wild confusion and discord. Marius, an admirable soldier, but otherwise a man of mediocre talents, and utterly unfit to act the part of a statesman, was the idol of the poor citizens, who urged him to save the state from the rapacious misgovernment of the rich. His attempts were pitiable failures; the brave, honest soldier fell into the hands of unscrupulous demagogues like Glaucia and Saturninus, and sullied the laurels that he had won in war by associating with men who did not hesitate to assassinate a political opponent. Not less fruitless was the wise and patriotic effort of Livius Drusus—'the Gracchus of the aristocracy'—to effect a compromise between the privileges of the rich and the claims of the poor. The oligarchic party among the former, i.e., the senate, were enraged by his proposition to double their numbers by the introduction of 300 equites; the latter by his offer to the 'Latins' and 'Allied Italians' of the Roman franchise. Drusus fell B.C. 91 by the steel of a hired bravo. Hardly a year elapsed before all the subject 'Italians'—i.e., the Marsians, Pelignians, Marrucinians, Vestinians, Picentines, Samnites, Apulians, and Lucanians—were up in wild and furious revolt against Rome; and, though the rebellion was crushed in less than two years by the superior

generalship of Marius, Sulla, and Pompeius Strabo (father of the 'great' Pompey), the insurgents virtually triumphed; for the promise which Drusus had held out to them of the 'Roman franchise' was made good by the *Lex Plautia Papiria*, B.C. 89. Yet the cost was terrible. It is calculated that 300,000 men—the flower of Rome and Italy—perished in the struggle; nor was even this tremendous holocaust sufficient. The jealousy that had long existed on the part of Marius toward his younger and more gifted rival, Sulla (q.v.), kindled into a flame of hate when the latter was elected consul B.C. 88, and received the command of the Mithridatic war—an honor which Marius coveted for himself. Then followed the fearful years of the 'civil wars' between the two chiefs, B.C. 88–82 when blood was spilled like water; and proscriptions and massacres were the order of the day. It was a 'Reign of Terror'—surpassing even the excesses of the French revolutionists. Sulla, leader of the aristocracy, which was nominally the party of order, triumphed; but the ferocious energy displayed by the revolutionists convinced him that the 'Roman franchise' could never again be safely withdrawn from the 'Italians;' and Roman citizens, therefore, they remained till the dissolution of the empire; but, on the other hand, his whole legislation was directed toward the destruction of the political power of the burgesses, and to the restoration to the senatorial aristocracy and priesthood of the authority and influence that they had possessed in the times of the Punic wars. That his design was to build up a strong and vigorous executive admits of no doubt, but the rottenness of Roman society was beyond the reach of cure by any human policy. It would be hopeless in our limits to attempt even the most superficial sketch of the complicated history of this period (see, however, for considerable fulness of detail, its leading personages—SERTORIUS: LUCULLUS: CRASSUS: POMPEY: MITHRIDATES: CÆSAR: CICERO: CATILINE: MARK ANTONY: LEPIDUS: CLEOPATRA: CLODIUS: BRUTUS: CASSIUS: CATO: AUGUSTUS). The utmost we here attempt is to enumerate results.

Abroad the Roman army continued irresistible. About 13 years after the extermination of the northern barbarians, the Cimbri and Teutones (B.C. 88), broke out in the far East the first of the 'Mithridatic wars,' which, like the Samnite Punic, and Macedonian wars, were three in number. Begun by Sulla B.C. 88, they were brought to a successful close by Pompey B.C. 65, though the general that had really broken the power of Mithridates was Lucullus. The result was the annexation of the sultanate of Pontus, as a new province of the Roman republic. Next year, Pompey marched southward with his army, deposed Antiochus Asiaticus, King of Syria, and transformed his kingdom also into a Roman province, while in the following year, B.C. 63, he reduced to a state of dependence Phœnicia, Cœle-Syria, and Palestine, storming Jerusalem, and, to the horror of the Jews, violating their Holy of Holies. But what a terrible commentary it is upon these glittering

triumphs to remember that during the same year there was hatched at Rome the conspiracy of Catiline (q.v.), which, if it had not been crushed by an extraordinary display of decision by the consul Cicero, would have placed at least the city of Rome at the mercy of a crew of aristocratic desperadoes and cut-throats. One thing now becomes particularly noticeable—viz., the paralysis of the senate—that 'governing board,' as Mommsen calls it, once the mightiest power in the world. In spite of all that Sulla did to make it once more the governing body in the state, the power passed out of its hands. Torn by wretched jealousies, spites, piques (personal and partizan), it could do nothing but squabble or feebly attempt to frustrate the purpose of men whom it considered formidable. Thenceforth the interest as well as the importance of Roman history attaches to individuals, and the senate sinks deeper and deeper into insignificance, until at last it becomes merely the obsequious council of the emperors. The famous coalition of Crassus, Pompey, and Cæsar (known as the *First Triumvirate*), which dates from B.C. 60, proves how weak the government and how powerful individuals had become; and the same fact is even more dismally brought out by the lawless and bloody tribunates of Clodius and Milo, B.C. 58–57, when R. was for a while at the mercy of bravos and gladiators. The campaigns of Cæsar in Gaul, B.C. 58–50, by which the whole of that country was reduced to subjection; his rupture with Pompey; his defiance of the senate; the civil wars; his victory, dictatorship, and assassination; the restoration of the senatorial oligarchy; the second triumvirate, composed of Antony, Lepidus, and Octavian; the overthrow of the oligarchy at Philippi; the struggle between Antony and Octavian; the triumph of the latter, and his investment with absolute power for life B.C. 29, which put an end at least to the civil dissensions that had raged so long (and was therefore so far a blessing to the state)—for these, see the titles last referred to, above.

The Roman Empire.—When Augustus had gathered up into himself all the civil and military powers of the state, its political life was at an end; henceforth the voices of the citizens are dumb, and only the rude clamor of the legions or the Pretorians (q.v.) is heard, as emperors rise and fall. It is, indeed, amazing to consider how long brute force managed to keep down the elements of anarchy and dissolution in the empire; but it must be remembered that it was the East that ruined Rome, and not Rome the East. Even in the worst days of the republic, the Roman administrators of the provinces were acknowledged to be less unjust, ravenous, tyrannical, and cruel than the native princes and sultans; and the servile myriads of Asia Minor and Syria witnessed the deposition of their dynasts without a shadow of regret—sometimes even with a cry of joy. The Romans had therefore comparatively little difficulty in retaining and even increasing their eastern conquests, while the superior discipline of their well-trained soldiery enabled them to repel and subdue even the intrepid barbarians of the north, though singly these were probably more

gallant men than the rank and file of the imperial legions. But no military prowess, however great, will, beyond a certain time, serve to keep a nation alive that is otherwise moribund; and even Christianity, with all its antiseptic and revivifying influences, came too late to reanimate the national life of the empire. When Augustus died, A.D. 14, the Roman empire was separated in the north from Germany by the Rhine, but it included both Holland and Friesland; from about the Lake of Constance it extended along the Danube to lower Mœsia, though the imperial authority was far from being firmly established there. In the east, the boundary-line was, in general, the Euphrates. In the south, Egypt, Libya, and, in fact, the whole of n. Africa, as far w. as Morocco, and as far inland as Fezzan and the Sahara, acknowledged Roman authority. The Roman franchise was extended to transmarine communities, and in the w. provinces especially it became quite common. To keep this enormous territory, containing so many different races, quiet, an army of 47 legions and as many cohorts was maintained, most of whom were levied among the newly admitted burgesses of the w. provinces. The reigns of Tiberius (q.v.), Caligula (q.v.), Claudius (q.v.), Nero (q.v.), Galba (q.v.), Otho (q.v.), and Vitellius (q.v.), present little of moment in a general survey of the external history of the empire, though the chronicle of their lives—those of Galba and Otho perhaps excepted—has all the horrible and revolting interest that attaches to records of conspiracy, assassinations, poisonings, massacres, lust, debauchery, and delirious madness. The most notable incident of this period is probably the concentration of the Pretorian Guards in the vicinity of Rome during the reign of Tiberius, which Niebuhr even pronounces 'the most momentous event in the history of the emperors;' and not without reason, for, until their dissolution by Diocletian, they were the real sovereigns of the empire. In Nero's time, Armenia was wrested from the Parthians, and restored to them only on condition of their holding it as a 'fief' of the empire; the Roman authority in England was likewise extended as far north as the Trent; and a great rebellion in Gaul (not, however, against Rome, but only against Nero), headed by Julius Vindex, a noble Aquitanian and a Roman senator, was crushed by T. Virginius Rufus, commander of the Germanic legions. During the profound peace that the empire had enjoyed everywhere, except on its frontiers—since the usurpation of the imperial authority—its material prosperity had greatly increased. The population was more than doubled; the towns became filled with inhabitants, and the wastes were peopled, wherever, at least, the Publicani (q.v.), or farmers-general, had not got the land into their rapacious hands; but the immorality of the rich, especially among the women, became yet worse than before, and virtuous men actually preferred concubinage with a slave, to marriage with a free-born Roman lady.

With the accession of Vespasian (q.v.) a better era commenced, which, if we except the reign of Domitian, con-

tinued uninterrupted for 100 years, comprising the reigns, besides those mentioned, of Titus (q.v.), Nerva (q.v.), Trajan (q.v.), Hadrian (q.v.), Antoninus Pius (q.v.), and Marcus Aurelius (q.v.). These all were men of fine and honorable character—some, e.g., Trajan, Hadrian, and Marcus Aurelius, were really illustrious rulers, worthy of the best days of Rome. Under all of them the provinces were better governed, the finances better administered, and public morals wonderfully improved. Nothing, indeed, is more clear than that, after the time of Vespasian, that *restaurator rei publicæ*, as he has been justly called, the worst days of Rome (in a moral point of view) were over. Never again did she give way to the horrible sensuality, gluttony, and profligacy of the 1st c. Bad emperors she had, as well as good, but they did not again succeed in corrupting their age. Blood, indeed, was shed freely enough, hostilities on the frontiers were as frequent as ever, and the violence and selfishness of military ambition were things that paganism had neither the care nor the power to quell; but the wild abyss of anarchy into which the empire latterly fell is less dreadful than the saturnalia of vice that filled the soul of Juvenal with indignation in the days of Domitian. How far the change was due to the influence of the ever-extending Christian religion, it is impossible to tell; but that Christianity did send a reinvigorating breath of new life through the old decaying body of the state is beyond dispute, and is written on the very face of the history of the first Christian centuries. The chief military events, from the days of Vespasian to those of Marcus Aurelius, are the final conquest of Britain by Agricola (q.v.), the final conquest of the Dacian monarchy, the victorious invasion of Parthia and of n. Arabia; and the conquest of the valley of the Nile as far south as Upper Nubia, by Trajan; the chastisement of the Marcomanni, Quadi, Chatti, etc., by Marcus Aurelius. Hadrian's long rule of 21 years was peaceful, and is memorable as the most splendid era of Roman architecture. The reigns of Commodus (q.v.), Pertinax (q.v.), and Didius Julianus (q.v.) were insignificant, except so far as they show the wretched confusion into which the administration of affairs inevitably fell when bad, or hated, or feeble rulers were invested with the purple. Able generals, respectable jurists, honorable senators, are not lacking, but their influence is personal and local. The reign of Septimius Severus, A.D. 193–211, is memorable as marking the first real change in the attitude of the emperors toward Christianity. The new religion was beginning to make itself felt in the state; and Severus, who was a Carthaginian, while his wife was a Syrian, may have felt special interest in a faith that, like themselves, was of Semitic origin. At all events, it was taken under imperial protection, and began to make rapid way. Caracalla (q.v.) and Elagabalus (q.v.) are perhaps the worst of all the emperors in criminality; but the mad brutality of the one and the monstrous debauchery of the other were purely personal affairs, and were regarded with horror by the citizens of the empire. The

reign of Alexander Severus is marked by the dawnfall of the Parthian dynasty of Persian kings, and the rise of the native Sassanidæ (q.v.), which, as Niebuhr observes, 'was one of the unluckiest things that could have happened to the Roman empire,' for the latter proved far more formidable enemies than the Parthian rulers. After the assassination of Severus (235) followed a period of confusion, bloodshed, and general mismanagement. The names of Maximin (q.v.), Maximus (q.v.), Balbinus (q.v.), Gordianus (q.v.), and Philip (q.v.), recall nothing but wretched quarrels, often ending in assassination. Then followed 'the beginning of the end.' The whole of Europe beyond the Roman frontier—the mysterious North—began to ferment. The Franks showed themselves on the Lower Rhine, the Swabians on the Maine; while the Goths burst through Dacia, routed the forces of Decius (q.v.), and slew the emperor himself at Mount Hæmus, crossed the Euxine, and ravaged the whole northern coast of Asia Minor. A little later—during the reigns of Valerian (q.v.), Gallienus, and the so-called *Thirty Tyrants*—the empire was nothing but a wild distracted chaos, Franks, Alemanni, Goths, and Persians rushing in from their respective quarters, like vultures scenting prey. The Goths swept over the whole of Achaia, pillaging and burning the most famous cities—Athens, Corinth, Argos, etc., while the Asiatic hordes of Sapor committed even greater havoc in Syria and Asia Minor; and but for the courage and skill of Odenathus, husband of Zenobia (q.v.), who had built up a strong independent kingdom in the Syrian desert, with Palmyra for its capital, might have permanently possessed themselves of the regions which they merely devastated. With Claudius Gothicus (268–270), the fortunes of the empire once more brightened. By him, and his successors Aurelian (q.v.), Probus (q.v.), and Carus, the barbarians of the north and northwest, as well as the Persians in the east, were severely chastised. Nay, when Diocletian obtained the purple (284), it seemed as if the worst were over, and the empire might still be rescued from destruction; but his division of the empire into East and West, with separate *Augusti* and assistant *Cæsars*—though it sprang from a clear perception of the impossibility of one man administering successfully the affairs of so vast a state—led to those labyrinthine confusions and civil wars in which figure the names of Maximian (q.v.), Constantius (see CONSTANTINE), Galerius (q.v.), Maxentius (q.v.), Maximin (q.v.), Licinius (q.v.), and Constantine, and which were brought to a close only by the surpassing genius of the last-mentioned. Under Constantine (324–337) occurred the great revolution in Roman history—the establishment of Christianity as the religion of the state. He also transferred the seat of government from R. to Byzantium, on the Bosporus, where he founded a new city, and named it Constantinople, after himself. But no sooner was the great statesman dead than the mutinous discords that he had kept down by the vigor of his rule broke loose; the empire underwent a triple division among

his sons; and though Constantius, the youngest, ere long became sole ruler, he lacked the genius of his father, and in his repeated campaigns against the Persians reaped nothing but disaster and disgrace. But the political fortunes of the empire now possess only a secondary interest; it is the struggles of the Christian sects and the rise of the Catholic Church that mainly attract the attention of the historian. There, at least, we behold the signs of new life — a zeal, enthusiasm, and inward strength of soul that no barbarism could destroy. Christianity came too late to save the ancient civilization, but it enabled the Roman world to endure three centuries of utter barbarism, and afterward to recover a portion of the inheritance of culture that it once seemed to have lost forever. Julian's attempt to revive paganism was a lamentable anachronism, but his efforts, when governor of Gaul under his kinsman Constantius, to repel the incessant incursions of the Franks and Alemanni, showed a fine valor and generalship, and were successful. The judgment of the poet Prudentius on 'the apostate' is that of posterity:

Perfidus ille Deo, sed non et perfidus orbi.

But after the death of Julian, the signs of the approaching dissolution of the empire became more unmistakable. Yet the great state seemed loath to die; and again and again in her death-agony, she put forth a momentary strength that amazed her foes, and taught them that even the expiring struggles of a giant were to be feared. Valentinian (q.v.), Gratian (q.v.), and Theodosius (q.v.), were rulers worthy of better times. The last-mentioned is even known to history as 'the Great.' But they fought against destiny, and their labor was in vain. Already swarms of ferocious Huns (q.v.) from the east had driven the Goths out of Dacia, where they had long been settled, and forced them to cross the Danube into the Roman territory, where the cruelty and oppression of the imperial officers goaded the refugees into insurrection; and in their fury they devastated the whole east from the Adriatic to the Euxine. Theodosius indeed subdued and even disarmed them; but he could not prevent them from drawing nearer to the heart of the empire, and already they are found scattered over all Mœsia, Servia, and northern Illyricum. Hardly was Theodosius dead when they rose again, under their chief, Alaric (q.v.), against Honorius, Emperor of the West. Rome was saved (for the moment) only by the splendid bravery and skill of Stilicho (q.v.), the imperial general; but after his assassination, the barbarians returned, sacked the city (410), and ravaged the peninsula. Three years earlier, hordes of Suevi, Burgundians, Alemanni, Vandals, and Alans burst into Gaul (where the native Celts had long been largely Romanized in language and habits), overran the whole, and then penetrated into Spain, where a Vandal empire was rapidly set up. It is utterly impossible (within our limits) to explain the chaotic imbroglio that followed in the West—the struggles between Visigoths and Vandals in Spain, between Romans and both, between usurpers of the purple

and loyal generals in Gaul—the fatal rivalries of these otherwise noble and gifted men—Boniface, governor (*comes*) of Africa, and Ætius, governor of Gaul—which led to the invasion of Africa by Genseric (q.v.), and its devastation from the Straits of Gibraltar to Carthage (429). While this was the state of affairs in the West, that in the East was no better. There the Huns, from mere love of havoc, had reduced vast regions to an utter desert; for nearly 50 years, indeed, the little ferocious demons had rioted in destruction. At last, a trivial quarrel sent them into Gaul; but somewhere in Champagne, they were routed with great slaughter (451) by a combined force of Visigoths, Burgundians, Franks, and Roman mercenaries, under Ætius and Theodoric, King of the Goths; and in spite of their successful invasion of Italy in the following year, their strength was permanently broken, and thenceforth they bore an insignificant part in history. But Ætius, the only man who could have decently propped up the wretched ruin called the Western Empire, was assassinated by his contemptible sovereign Valentinian, whose own outrages led to his murder too; while his widow, Eudoxia, to be revenged on his murderer and successor, Petronius Maximus, invited Genseric, the 'scourge of God,' over from Africa, and exposed Rome to the horrors of pillage for 14 days. Ricimer (q.v.), a Sueve, next figures as a sort of governor of the city, and what relics of empire it still possessed; for Gaul, Britain, Spain, w. Africa, and the islands in the Mediterranean, all had been wrested from it. While Majorian—the last able emperor—lived, Ricimer's position was a subordinate one, but, thenceforth, the western emperor was an emperor merely in name—a *roi fainéant*—while the real sovereignty was exercised by this Suevic *Maire du Palais*, who was succeeded in his functions by the Burgundian king Eunobald, and the latter again by Orestes, in whose time the final catastrophe happened, when Odoacer (q.v.), placing himself at the head of the barbarian mercenaries of the empire, overthrew the last, and the most ridiculous, occupant of the throne of the Cæsars (476), who, by a curious coincidence, bore the same name as the mythical founder of the city—Romulus.—See besides the ancient histories of Polybius, Livy, Sallust Tacitus, etc , the modern histories of Gibbon, Niebuhr Arnold, Merivale, Duruy, Mommsen, and Ihne.

ROME: city, capital of ancient Italy; on the left bank of the Tiber, about 16 m. from the Mediterranean. The legend of its origin belongs to Roman history: see Rome —'general term for the territory,' etc. Romulus. It was built at first in the form of a square (*Roma Quadrata*), and gradually extended, until, in the reign of Servius Tullius, it embraced one after another the famous seven hills—the Palatine, Capitoline, Quirinal, Cœlian, Aventine, Viminal, and Esquiline. Servius Tullius (according to the legend) so extended the *Pomœrium* as to make the sacred inclosure of the city identical with its walls. After its first destruction, B.C. 390, by the Gauls, it was hastily rebuilt without respect to order, and with narrow irregular streets. At the

close of the wars against Carthage, Macedonia, and Syria, public buildings and private houses of great architectural beauty were added; and under Augustus, similar improvements were made, while the mean and narrow streets were allowed to stand. In the reign of Nero, A.D. 64, two-thirds of the city were destroyed by fire, a catastrophe which furnished that emperor with the opportunity of gratifying his architectural predilections, in widening and straightening the streets, and in restricting the height of the houses, of which a certain part was built of fireproof stone from Gabii and Alba—which achievement has been made the basis of recent futile attempts to rehabilitate his reputation. Although it had long outgrown the limits prescribed by Servius Tullius, still the walls of that king marked the extent of Rome, properly so called, till the 3d c. after Christ. Under Aurelian, however, the need of fortifications led to the construction of new walls, which took in the city of Servius Tullius with all the suburbs, such as the Mons Janiculus on the right of the Tiber, and the Pincian on the left. These walls, begun 271, were completed by the next emperor, Probus, were 11 m. in circumference, and were afterward restored by Honorius, and partially rebuilt by Belisarius.

Extent and Population of Rome.—Under Servius Tullius, the walls were seven m. in circumference, but the space which they comprised was not entirely occupied by buildings. Under Aurelian, the new walls were 11 m. in circumference, and the city went on extending until it reached a circumference of 13 m. under Vespasian. The population at any given period cannot be exactly determined. According to the *Monumentum Ancyranum*, the *plebs urbana* under Augustus amounted to 320,000; with the addition of women, senators, and knights, the inhabitants must have numbered about 650,000; while the slaves, who cannot have been less numerous than the free population, must have given an aggregate of at least 1,300,000. Considering the enlargement of the city under Vespasian, we may safely consider its population as not less than two millions in his reign.

The Walls and Gates.—The first wall, that attributed to Romulus, embraced merely the Palatine, and was pierced by three gates. The larger wall of Servius Tullius does not appear to have been continuous, but only to have connected the seven hills by fortifications drawn across the narrow valleys intervening: according to Pliny, there were 37 gates in this wall. Subsequent to the walls of Servius were those of Aurelian, which, except the part beyond the Tiber, are the same as those which surround the modern city. They were divided by 14 gates. The Tiber was crossed by eight bridges.

In the interior of the city were several open spaces of ground paved with stones, which were used as places of business or as market-places, and were called *fora* (see FORUM). Besides these, there were other open spaces of much larger extent, which were grass-grown, and set with trees and works of art. Of these, called *campi*, and used

by the people in their exercises and amusements, the chief was the Campus Martius. Surrounding these fora and campi were the private and public buildings of Rome which were arranged in streets and districts. The chief street was the celebrated Via Sacra, remains of which are still seen in the Forum of modern Rome.—Rome contained no fewer than 400 temples, the oldest being the temple of the Feretrian Jupiter, on the Capitoline, built, according to tradition, by Romulus, and restored by Augustus. The most famous in history, and the most magnificent in architecture, was the Capitolium, on the summit of the Capitoline (see CAPITOL). The only other temple requiring special mention was the Pantheon (q.v.), built by Agrippa B.C. 27: it is still standing.—For other striking features of the ancient city, see CIRCUS: AMPHITHEATRE: BATH: BASILICA.

Rome abounded in covered walks, supported by columns, and open on one side. These were known as *porticus*, and were frequented for recreation, or transaction of business. They were in many cases adorned with paintings and other works of art, and furnished with libraries.—More peculiar to ancient Rome, however, were the triumphal arches: see ARCH, TRIUMPHAL.—The great prison of R. was the Carcer Mamertinus, built by Ancus Martius on the slope of the Capitoline, which overhangs the Forum. Servius Tullius added to it a subterranean dungeon, 12 ft underground, walled and arched over with masonry.—There were also the barracks (*castra*), such as the Castra Prætoria, built by Emperor Tiberius for the imperial guards; and the Castra Peregrina, where the foreign troops were quartered; the aqueducts (see AQUEDUCT); and the sewers (see CLOACA MAXIMA).

Rome abounded also in palaces (*palatia*). Of these, the Palatium, or imperial palace, fronting the Forum, was so enlarged by Augustus, that, from being the private house of Hortensius the orator, it became the imperial residence. Nero built two still more splendid palaces, one which covered the whole Palatine Hill and part of the Esquiline, and was burned down in the great fire; and one which replaced the other. Many of the private palaces also were on a magnificent scale.—On the hills around the city were laid out *horti*, or parks and gardens, adorned with handsome buildings and works of art.—The city was rich also in sepulchral monuments. See ROMAN ARCHITECTURE.—In addition to these imperial or private mausolea, columns were erected to the more illustrious of the Romans, e.g., the Columna Rostrata, in honor of the consul C. Duilius for his victory over the Carthaginian fleet; the Columna Trajani, in the Forum; and the Columna Antonini Pii, in the Campus Martius.—Obelisks (q.v.), mostly transported from Egypt, occupied prominent parts of the city. Since R. has again become the capital of Italy, extensive excavations among the ruins have been made on a systematic plan, and with interesting results.

ROME, the modern city, cap. of Italy, occupies the plain

on each side of the Tiber, and the slopes of the seven hills. Its geographical position at the Observatory of the Collegio Romano is lat. 41° 53′ 52″ n., long. 12° 28′ 40″ e.; its height above sea-level on the Tiber, under the Ælian Bridge, is 20 feet.

The city is built on marshy ground, and is divided by the Tiber into two very unequal parts, that on the left bank being Rome proper, and that on the right bank being the Leonine city, or Trastevere. Its walls, 12 m. in circuit, with 16 gates, of which four are built up, inclose a space of which little more than one-third is inhabited, the greater part to the s. of the Capitol being cultivated as gardens or vineyards. The site of the ancient Campus Martius constitutes the lower and most densely populated part of the town, in which all the trade is carried on. Its central part is crossed by the Corso, a street about one mile long, running from the Piazza del Popolo, or great northern entrance of the city, to the Palazzo di Venezia, at the foot of the Capitol. From the Piazza del Popolo—a handsome open space, with an obelisk from the Temple of the Sun at Heliopolis in the middle—branch out, to the right and left of the Corso, the Piazza di Spagna, favorite quarter of foreigners, and the Ripetta. More than half-way up the Corso, and to the right, runs the wide street or Strada del Gesù, leading to the noble church and convent of that name, chief residence of the order of the Jesuits. On either side of the Corso, the buildings are regular and substantial, and consist of palaces, such as the Borghese, the Ruspoli, the Ghigi, and others, besides many churches. Between the Corso and the Tiber, to the w., the streets are irregular, densely peopled with inferior tradesmen, and consisting mainly of market-places, shops, and dwellings of a low class. In this quarter is the University La Sapienza, between which and the Corso is the Rotunda or Pantheon. South of Ponte Sisto, on the left bank of the Tiber, and winding round the w. base of the Capitol to the foot of the Palatine, is the Ghetto, or Jews' Quarter, consisting of narrow dirty alleys, with rows of high old houses. Still further s., and on the left bank of the Tiber, runs a series of narrow streets as far as the Palatine, containing some of the oldest churches in Rome—e.g., Santa Maria in Cosmedin, built in the 3d c. Beyond this extend s.e. the Aventine, Palatine, and Cælian hills, covered with gardens, vineyards, and orchards, besides churches, convents, and ruins. At the e. extremity of the Cælian stands the magnificent Basilica of San Giovanni in Laterano. South of the Aventine, and between it, the river, and the walls, are the Prati del Popolo Romano, forming part of a large low-lying cultivated tract. Near the Prati is the Protestant Cemetery.

On the slope of the Pincian and Quirinal hills, and covering part of the plateau which joins all the e. hills of Rome, lies the upper town, consisting mainly of palaces, villas, churches, convents, and other buildings on a large scale. It abounds with ample courts and gardens, and is crossed by two long streets, which intersect each other at right

angles on the crest of the Quirinal. The Pincian is laid out in fine walks, the favorite promenade of the Romans; while between the Pincian and the Quirinal stands the great Barberini Palace. On the summit of the Quirinal is the famous pontifical palace and garden; and in the square before the palace are the two colossal statues of Castor and Pollux, with their horses, whence the hill receives its other name of Monte Cavallo. On the Esquiline, which here joins the Quirinal, and forms the e. extremity of the city, stands the magnificent church of Sta. Maria Maggiore; beyond it to the n., e., and s., the Esquiline is entirely covered with gardens, villas, and fields, with here and there a church. The principal buildings on the Capitol are three palaces, the work of Michael Angelo, which form three sides of a square, in the centre of which stands the equestrian statue of M. Aurelius Antoninus. One of the palaces is the Capitoline Museum, one of the finest collections of statuary and sculpture in Italy.

The third great division of the modern city lies on the right bank of the river, and is sub-divided into two parts—the Vatican (otherwise called Il Borgo) and the Trastevere. Divided from the latter by an inner wall, the Borgo or Leonine city occupies the space between the bridge of San Angelo and the Piazza of St. Peter's. Its chief buildings are the palace of the Vatican (q.v.) and the Basilica of St. Peter's (q.v.). Besides the Vatican and St. Peter's, the Leonine city contains the great hospital of the Santo Spirito, which accommodates annually 13,500 patients, suffering under diseases mental or bodily. The castle of San Angelo, with massive circular tower, called from its founder the 'Mole of Hadrian,' is surrounded with ramparts, ditches, and bastions, mounted with cannon, and forms the citadel of Rome.

To the south of the Borgo, and between the Janiculum and the Tiber, is the Trastevere, properly so called. The Janiculum, a straight ridge, about a mile and a half long from n. to s., rises about 300 ft. above the river. The northern half of its length is occupied by the long street called the Lungara, running closely parallel to the Tiber, which, at the s. extremity of the Lungara, makes a bend to the e., and bounds the greater part of the Trastevere district. On the Janiculum is the Villa Spada, near the gate, outside of which is the Villa Pamfili, favorite promenade of the Roman youth. On the same hill, the fountain called L'Aqua Paola, the largest in Rome, occupies a commanding site, and, as seen from a distance, resembles a triple triumphal arch, through which streams of water rush.

The churches, of which there are more than 300, form a notable feature in the city, from their architecture, their paintings, and other decorations So also are the palaces of the aristocracy, often of great magnitude, with vast courts and spacious apartments. Of even better style as residences are the villas, within and without the walls; while the handsome fountains, of which there are at least 12 principal ones, impart a cheerful and refreshing aspect

to the city. There are three modern aqueducts, which keep the city supplied with abundance of water: the Aqua Vergine, the Aqua Felice (anc. Aqua Marcia and Claudia), and the Aqua Paola (anc. Alsietina).

Rome is, on the whole, a healthful city, except at the close of summer and the beginning of autumn, when the malaria is prevalent, and fevers are often fatal, especially to strangers. The Trastevere is its most uniformly healthful district, the inhabitants of which are superior in physical development to those of the other parts. The neighborhoods of the Pincian and the Quirinal, particularly the former, are most frequented by Englishmen. The trade of the city is insignificant, consisting of a few small manufactures of hats, silk scarfs, gloves, artificial feathers, false pearls, mosaic trinkets, etc., and of such articles as artists need and visitors fancy. The only great manufacture, if it can be called so, is that of pictures, original and copied; for the painting of these, Rome offers not only the advantages of numerous galleries of art, but also purity of sky. The worst feature of R. is its dirtiness.

1870, Oct., Rome, with the rest of the papal territory, was annexed to the kingdom of Italy, and is now the capital. The pope retains the rights of a sovereign within the Vatican. Pop. (1901) 462,783.

ROME: city, cap. of Floyd co., Ga.; on the Coosa river, here formed by the Etowah and Oostenaula rivers, and on the East Tennessee, the Virginia and Georgia, the Rome and Carrollton, the Rome and Decatur, and the Rome and Northeastern railroads; 65 m. n.w. of Atlanta. The city has a picturesque location, numerous public parks, fine driving-roads, good drainage, excellent water-supply, and large grain, grass, lumber, and cotton trade. The manufacturing industries are numerous and varied, the annual value of the aggregate products being about $2,000,000; these include planing mill products, manufactured cotton, hosiery, leather, stoves, iron, machinery, farming implements, scales, furniture, fertilizers, brick, lime, crates, braces, etc. The Etowah and Oostenaula rivers are spanned by several fine bridges, and are navigable to R. The educational institutions include Shorter College for women (cost and endowment $170,000), Rome Female College (founded 1845), Young Men's Library, public grammar and high schools; there are also a Gynecological Infirmary, Y. M. C. A. building, numerous churches, city hall, co. court house, fine post-office building, opera house, Masonic temple, banks, etc. Pop. (1900) 7,291; (1910) 12,099.

ROME: city in Oneida co., N. Y.; on the Mohawk river, the Erie and the Black river canals, and on the New York C. & H. R., the New York, O. & W., and the Rome, W. & O. railroads. The last mentioned now (1904) belongs to the N. Y. C. & H. R. railroad. The city is about 110 m. w. by n. of Albany and 16 m. n.w. of Utica. It is at the head of the Mohawk valley, on a plateau about 450 ft. above sea-level. The first settlement was made in 1760 by John Roof. The central part of the city is the site of Fort Stanwix (q.v.), erected here in 1758 at a cost of over $200,000. It was then a place of great importance as it was the defensive point in the 'carrying place,' or portage, that part of the route between the Atlantic and the Great Lakes, where the journey had to be made by land. Fort Stanwix was a storm centre in the French war and also in the Revolutionary war. Here in July and August, in 1777, there were many sharp engagements, and finally the Tryon County militia under Herkimer defeated the British under St. Leger in the battle at Oriskany. A government arsenal was established here in 1814, but in 1873 was sold for a factory. In 1819 Rome became a village and in 1870 was chartered as a city.

The surrounding country is devoted to farming and dairying; but Rome is a manufacturing city. The chief industrial establishments are brass and copper mills, locomotive works, knitting mills, brick works, canneries, breweries, metal bedstead factories, and creameries. The prominent public buildings are the Rome State Custodial Asylum for Incurable Insane, the Oneida County Home, the municipal buildings, and some of the business blocks. There are 17 churches and 2 missions. The educational institutions are the Central New York Institution for Deaf Mutes, Saint Peter's Academy (R. C.), opened in 1865, 10 graded public and parish schools, 5 public kindergartens, 4 private schools, and 3 libraries. The libraries are the high school, the Jervis City library, and the Y. M. C. A. library. There are 2 national banks with a combined capital of $200,000, and 2 savings banks. The government is vested in a mayor and a council of 15 members, who hold office 3 years. Pop. 20,497.

ROME, Œcumenical Councils of: are 6 in number, namely, 5 Lateran Councils, so called as having been held in the Lateran palace; and the Vatican Council, held in the palace of the Vatican. 1. The ninth General Council of the Church, the first Lateran Council, was held in the reign of Calixtus II. in 1123; it confirmed the concordat of Worms, regarding investiture (q.v.). 2. The second Lateran (10th general) Council, held in 1139 under Innocent II., condemned the Manichæan errors of Arnold of Brescia (q.v.). 3. The third Lateran (11th general) Council, under Alexander III. in 1179, condemned the heresies and impieties of the Waldenses and Albigenses. 4. The 12th general Council (4th Lat-

eran) held in 1215 in the pontificate of Innocent III., confirmed the doctrine of transubstantiation and promulgated decrees for the reformation of abuses in the Church and the extirpation of heresies. 5. The 19th General Council (5th Lateran) under Julius II., assembled in 1511, was in session till 1517 when Leo X. was pope; it enacted some laws for the reformation of clerical discipline, and procured from the king of France, Francis I., the revocation of the Pragmatic Sanction (q.v.), which the French clergy had ever regarded as the bulwark of the Gallican Liberties. 6. The Council of the Vatican (20th œcumenical council), which was opened Dec. 8, 1869, and closed Oct. 20, 1870, under Pius IX., affirmed as the teaching of the Catholic Church the doctrine that the Pope when teaching *ex cathedra* and defining matters of faith or morals is always divinely aided and is infallible.

ROMERO, *rō-mā'rō*, Don Matias: Mexican diplomat: b. Oaxaca, Mexico, Feb. 24, 1837; d. Washington, D. C., Feb. 30, 1898. He was graduated from the Academy of Theoretical and Practical Law, Mexico City, in 1855, and admitted to the bar in 1857. In the revolution of that year he supported the government and served as secretary to Melchor Ocampo. In 1859 he was appointed secretary to the Mexican legation at Washington and in 1860-3 was *chargé d'affaires*. He then returned to Mexico, where he was commissioned colonel in the army, became chief of staff to General Diaz, and later in the same year resumed his diplomatic career as minister to the United States. He held the portfolio of the treasurer in Juarez's cabinet in 1868-73, was a member of the senate in 1876 and on the election of Diaz to the presidency he resumed his position in the treasury. He was postmaster-general in 1879-80, and in 1882 he was again sent as minister to the United States, where he arranged the boundary question and concluded a reciprocity treaty. He was reappointed in 1884 and continued in the position until his death. He published more than 50 volumes, chiefly of technical reports, among which are: *Coffee-culture on the Southern Coast of Chiapas* (1875); *Correspondence of the Mexican Legation at Washington During the French Intervention* (1870-85); *The State of Oaxaca; Mexico and the United States*.

ROMEYN, *rō'mīn*, John Brodhead: American Presbyterian clergyman: b. Marbletown, N. Y., Nov. 8, 1777; d. New York, Feb. 22, 1825. He was graduated from Columbia in 1795 and was licensed to preach in 1798. He held charges at Rhinebeck, Schenectady, Albany, and New York successively, attained a high reputation as a theologian and was popular as a preacher. He was one of the founders of Princeton Theological Seminary, president of Transylvania University, a trustee of Princeton College and a moderator in the Presbyterian General Assembly.

ROMILLY, *rŏm'il-i*, Sir SAMUEL: English lawyer and law reformer: 1757, Mar. 1—1818, Nov. 2; descended from a family of French Protestants, who, after the revocation of the Edict of Nantes, emigrated to England. At the age of 16, R. was articled to one of the sworn clerks in chancery; but at 21 he determined to go to the bar, and entered himself at Gray's Inn. At first he made little progress; but applied himself to the study of criminal law; and in 1789, hopeful, like many other English liberals, of the happy effects of the French Revolution, he published a short pamphlet on the subject. In 1792 and 95 he declined a seat in parliament. In 1806 he was appointed solicitor-gen. in the Grenville administration. He unwillingly received the honor of knighthood; but the king having for 20 years previously knighted all his attorneys and solicitors-general on their appointment, would take no refusal. He was afterward returned for Queenborough, and 1807 for Wareham. He then gave his earnest efforts to ameliorate the barbarity of the criminal law, proposed abolition of the punishment of death in various cases of theft, and published a pamphlet *On the Criminal Law as It Relates to Capital Punishments.* His bills were, session after session, opposed by the government of the day, the judges, and many of the bishops, as dangerous innovations; but R. persevered, and lost no opportunity of protesting against the illogical as well as shocking frequency of capital punishments. The measures that he proposed for mitigating the severity of the criminal law were mostly carried by others; though he framed two or three acts of great importance. He was active in the anti-slavery agitation, and in opposing the suspension of the Habeas Corpus Act, the spy system, and the despotic acts of the government. In 1818 he was spontaneously chosen by the electors of Westminster as their representative. The death of his wife caused him a grief so intense that it preyed upon his mind—occurring after a period of his own prolonged mental exertion—and three days afterward he died by his own hand. He had at this time attained the foremost rank at the chancery bar, and his professional gains were said to average £14,000 a year. His death excited profound sympathy, and was considered a public calamity. His *Speeches in Parliament* have been published in two vols.; also his Autobiography, with a selection from his Correspondence, admirably edited by his sons, in 2 vols.—His second son, JOHN, Lord ROMILLY (d. 1874), educated at Trinity College, and called to the bar at Gray's Inn 1827, was made solicitor-gen. 1848, atty.gen. 1850, master of the rolls 1851, and baron 1866. As master of the rolls, he superintended the publication of public records throwing much light on English history.

ROMNEY, *rŏm'nĭ*, GEORGE: English painter: b. Beckside, near Dalton-in-Furness, Lancashire, Dec. 15, 1734; d. Kendal, Nov. 15, 1802. His father was a cabinet-maker, and the boy learned this trade, but he also taught himself drawing and carved wood, and at 19 was apprenticed to a portrait-painter at Kendal named Steele. In 1757 he entered on his own career as portrait-painter, and after a certain amount of local success went up to London (1762), leaving his wife (whom he married in 1756) and his two children in Kendal. The following year he won a prize offered by the Society of Art for a historical painting, by his *Death of General Wolf,* and rose steadily in popularity until he held a position beside Reynolds and Gainsborough as a portrait-painter. He visited France twice; once in 1764 and again in 1790, and resided in Italy during the years 1773-5. While in Italy he gave much attention to the works of Correggio, and this, along with his study of the nude, greatly influenced his after-work. In 1783 Romney made the acquaintance of Emma Hart, who afterward married Sir William Hamilton, and she became the model from which he painted such well known pictures as *St. Cecilia, Joan of Arc, A Magdalene, A Bacchante,* and *Sensibility.* His *Lady Hamilton as Circe* sold in 1890 for $20,210; his *Lady Hamilton as Sensibility* in the same year for $15,025. Gradually he began to withdraw from portrait-painting, and give more time to historical and imaginative work. In 1786 Alderman Boydell founded his famous Shakespeare gallery, to which Romney contributed a scene from the *Tempest* and the *Infant Shakespeare Attended by the Passions;* while about this time he painted *Milton and his Daughters,* and *Newton Making Experiments with the Prism.* In order to find room for these great imaginative pictures he erected a large studio at Hampstead, which he occupied in 1797. But his health at this time began to fail, and in the summer of 1799 he returned to Kendal utterly weakened in body and mind. He had only seen his wife twice since he left her 35 years before, yet she received and nursed him faithfully through his premature senility and dotage until his death.

This art of Romney displays a certain fitfulness of achievement due partly to the instability of his character, and partly to his defective early training. His defects of technique are most apparent in his historical and imaginative subjects; it is only when we examine his portraits and especially his female portraits, that we find that beauty of form and subtle charm of color which place him among the greatest portrait-painters of the 18th century.

Consult: Hagley, *Life of George Romney* (1809); Gamlin, *George Romney and His Art;* Gower, *Romney and Sir Thomas Laurence;* J. Romney, *Memoirs of the Life and Writings of George Romney* (1830).

ROMOLA, *rŏm'ō-la:* a novel by George Eliot, first published serially in *The Cornhill Magazine* from July 1862 to July 1863, and issued in book form in 1864. The scene is laid in Florence at the end of the 15th century, and its great figure is Savonarola. The civic struggle between the Medici and the French domination and the religious struggle between Renaissance paganism and ascetic Christianity form the background of the tale. The story proper follows the fortunes of Tito Melema,—a Greek, charming, brilliant, false,—his marriage with Romola of the Florentine house of Bardi, his moral degredation and death. The incidents are many, the local color is rich, but the emphasis of the book is laid on the character of Tito.

ROMORANTIN, *ro-mo-rŏng-tăng:* small town of France, department of Loir-et-Cher, 25 m. s.e. of Blois. At the siege of this town by the Black Prince 1356, artillery is said to have been first used. Various woolen fabrics are manufactured. Pop. 8,000.

ROMP, n. *rŏmp* [another spelling of RAMP, which see: Ger. *rammeln,* to sport in an excited manner: Dut. *rammelen,* to rattle, to romp]: a young person of unrestrained spirits; a girl noisy and boisterous in play: V. to play in a rude and boisterous manner. ROMP'ING, imp.: N. act of one who romps: ADJ. boisterously playful. ROMPED, pp. *rŏmpt.* ROMP'ISH, a. *-ĭsh,* given to boisterous play: inclined to romp. ROMP'ISHLY, ad. *-lĭ.* ROMP'ISHNESS, n. *-nĕs,* the quality of being rompish; disposition to rude sport; rudeness.

ROMPU, *rŏm'pū,* in Heraldry: term applied to a chevron when the upper part is taken off, and remains above it in the field.

ROMULUS, *rŏm'ū-lŭs:* mythical founder of the city of Rome; appearing in legend as the son of Mars. His name is only a lengthened form of Romus, and he is therefore to be regarded rather as a symbolical representation of the Roman people than as an actual individual, like Æolus, Dorus, and Ion, eponymous ancestors respectively of the Æolians, Dorians, and Ionians. But though the legend of Romulus cannot be accepted as history in its details or its outlines, it is nevertheless interesting as showing how, after the lapse of years, when Rome had become a place of importance, its inhabitants tried to conceive a probable origin for it. The usual form of the legend of Romulus is in outline as follows: At Alba Longa, in Latium, there had ruled for centuries a line of kings descended from the Trojan prince Æneas. One of the latest of these, at his death, left the kingdom to his eldest son, Numitor. A younger son, Amulius, dispossessed Numitor, murdered his only son, and compelled his only daughter, Silvia, to become a vestal virgin. But Silvia having become the mother of twins by Mars, his fears were aroused. He placed the

babes in a trough, which he cast into the Anio, whence it was carried into the Tiber, then in flood, and overspreading its banks far and wide. The trough was stranded in the marshes at the foot of the Palatine, where Rome afterward stood; and the infants were suckled by a she-wolf which carried them into her den, near at hand; also a woodpecker brought them food. Faustulus, the king's shepherd, having at length seen this marvellous thing, took the infants home to his wife, Acca Larentia, and brought them up with his own children. Growing up, the two boys became chiefs of a warlike band of shepherds on the Palatine; and Remus, one of the twins, was taken prisoner in a strife with his grandfather Numitor's herdsmen. Numitor recognized him as the son of his daughter Silvia: and the twins avenged the family wrongs by slaying Amulius, and placing their grandfather on the throne. But R. and his brother removed from Alba Longa to their old abode on the banks of the Tiber, and resolved to build a city there. The Palatine was chosen (by augury) for the site, and R., yoking a bullock and a heifer to a plowshare, marked out the *pomœrium*, or boundary, on which he proceeded to build a wall. Remus, despising the construction, scornfully leaped over it to show its inadequacy for protection against attack; whereupon R. slew him, but was immediately struck with remorse, and instituted the *Lemuria*, or festival for the souls of the departed. R. then erected a 'sanctuary' or refuge on the Capitoline for runaway slaves and homicides, and thus he soon increased the number of his followers; but as wives were much wanted, and the neighboring tribes refused to supply them, R. resorted to stratagem: this led to the celebrated *Rape of the Sabine Women*, which wholesale abduction of virgins led to a series of wars, in which R. was invariably victorious, until Titus Tatius, at the head of a large army of Sabines, drove him from the open fields, and forced him to take refuge in his city on the Palatine. R. had garrisoned the Capitoline also, but the treachery of Tarpeia, daughter of the lieutenant of the fort, placed it in the hands of his adversaries. Next day, in a fierce battle in the valley, Sabines and Romans fought till they were exhausted, when the Sabine women rushed in between their husbands and their fathers, and implored them to be reconciled. This was agreed to; and they resolved to unite and to form only one people—the followers of R. dwelling on the Palatine, those of Titus Tatius on the Capitoline and Quirinal. On the death of Titus Tatius, R. became sole sovereign. See ROME—'general term for the territory,' etc. The legend continues with the statement that, after a reign of 37 years, R. was miraculously removed from earth. While he was standing in the Campus Martius, reviewing his militia, the sun was eclipsed, and a dark storm swept over the plain and hills: when it had passed, the people looked round for their king, but he was gone: his father, Mars, had carried him into the sky in a chariot of fire. Afterward R. reappeared to Proculus Julius, and predicted a great future for the Roman people, whose guardian god, under the name of

Quirinus, he promised to be. The festival of the Quirinalia (Feb. 17) was instituted in his honor; but the nones of Quintilis (July 7) was the day on which he was believed to have departed from earth.

ROM'ULUS AUGUS'TULUS: see ODOACER.

RONALDSHAY, *rŏn'ald-shā*, NORTH AND SOUTH: two of the Orkney Islands (q.v.). *North R.*, at the n. extremity of the Orkneys, has 3¾ sq. m., partly under tillage, partly in pasture. Sea-birds in great variety frequent the coasts, and lobsters and cod are fished. Pop. about 600.—*South R.*, washed on the south by the Pentland Firth, has an area of about 20½ sq. m. St. Margaret's Hope, on the n. coast, is a safe and convenient harbor. The inhabitants subsist mostly by fishing for cod and herrings. Pop. 2,500.

RONCESVALLES, *rōn-sē-vâl'lĕs*, Sp. *rōn-thĕs-vâl'yĕs*: one of the valleys in Navarre, on the s. side of the Pyrenees, about 20 m. n.n.e. of Pamplona; famous in song and story as the scene of a defeat of Charlemagne's army by a combined force of Arabs, Navarrese, and French Gascons 778. Charlemagne, allured by the promise of the feudal supremacy of Catalonia, opened a campaign in aid of the viceroy of that province, against the Mohammedans. With a powerful army he passed the Pyrenees, penetrated Navarre, took Pamplona, the capital, and levelled the walls of the city with the ground. Clearly this was not part of his programme as champion of the Christian religion in Spain; for Pamplona was the cap. of a Christian state, and it is even asserted that prior to 870 Moors had not been admitted within its walls. Pressing onward, Charlemagne subdued a great part of the country between the Pyrenees and the Ebro; but on his return northward, while threading the defiles of the mountains near R., his rear-guard was furiously assailed and annihilated by a mixed force, of which a body of Navarrese, enraged at the destruction of their capital, formed an important section. Eginhard, sec. of the emperor, tells us that the rear-guard, including many generals and chief nobles, was totally destroyed, and that the spoil of the campaign, with the whole baggage of the army, fell into the hands of the victors. In this action fell Roland, the famous Paladin, hero of a hundred romances (for the *legend*, see ROLAND, LEGEND OF).

RONCIGLIONE, *rōn-chēl-yō'nā:* city of central Italy, province of Rome, 12 m. s.s.e. of the city of Viterbo. It has an impressive cathedral, a Gothic castle, and several fine old palaces. Hats, cloth, and cotton goods are manufactured, and there are iron, brass, and copper works. In the neighborhood of the city are sepulchral vaults, hollowed out in the porous rock (*tufo*), and several sulphureous springs. Pop. 6,084.

RON'DA, *rōn'dâ*, Sp. *rōn'thâ:* picturesque Moorish town of Spain, modern province of Malaga, on the Guadiaro, 50 m. n.n.e. of Gibraltar, at considerable elevation above sea-level. Its climate is unusually salubrious, and the town is a favorite summer retreat. The great annual fair is in May, when the small but active horses of the town are sold to officers from Gibraltar; also, there is extensive sale of leather, saddlery, embroidered gaiters, garters, and mantuas. Pop. 20,822.

RONDEAU, n. *rŏn'dō* [F. *rondeau*, a rondeau—from *rond*, round (see ROUND)]: originally (with the French) a little poem of 13 lines, divided into three unequal strophes; the two or three first words of the first line serve as the burden, and recur after the 8th and 13th lines.—Thence, in *music*, the term (but properly in music *Rondo*) has come to denote a light air, consisting of three or more strains, the first terminating in the original key, and each of the others so constructed as to conduct the ear back to a repetition of the first strain. In a more general sense, the name rondo is also often applied to any light lively tune which ends with the first strain repeated.—The laws of the R. as a poem have varied so greatly that the term must be considered extremely elastic: in all its forms, however, the characteristic metrical feature lies in a peculiar use of the refrain. In recent years English poets have successfully essayed this form of poetry, notable among whom is Swinburne.—*Rondel* is a somewhat similar form of poem.

RONDE BOSSE, n. *rŏngd' bŏs* [F.—from *rond*, round, spherical; *bosse*, a bunch, a swelling]: in *arch.*, a term applied to sculptured objects in their full forms, in contradistinction to those which are in *relief*, or attached more or less to a plane or ground.

RON'DEL: see RONDEAU.

RONDELET, *rōngd-lā'* or *rōng-dĕh-lā'*, WILLIAM: French naturalist: 1507–66; b. Montpellier. He became a medical practitioner in Montpellier, and prof. in the medical school; and was a zealous student of nat. history, particularly ichthyology. His *Histoire entière des Poissons* (Lyon 1558) was one of the first works which contributed much to that branch of science.

RON'DO [It.]: musical term: see RONDEAU.

RON'DOUT (N. Y.): see KINGSTON (N. Y.).

RONDURE, n. *rŏn'dūr* [F. *rondeur*, roundness; *rond* round (see ROUND)]: in *OE.*, a circle; a round.

RONE, n. *rōn* [Icel. *renna*, to flow: Sw. *rænna*, a rain-spout: Dan. *rende*, a canal]: in *Scot.* and *prov. Eng.*, a spout for carrying rain-water from the roof to the ground; a run of ice.

RONG, n. *rŏng:* OE. for RUNG, the round of a ladder: see RUNG 2.

RONGE, JOHANN: see GERMAN CATHOLICS

RONION, or RONYON, n. *rŏn'yŭn* [F. *rogne;* OF. *roigne,* itch, scab, scurf—from L. *robīgo* or *robīginem,* rust]: in *OE.,* one much diseased with itch and scurf—applied in contempt to a woman; a drab: see also ROYNISH.

RONSARD, *rōng-sâr'*, PIERRE DE: celebrated French poet, and reformer of French poetry; 'Prince of Poets,' as he was called in his time and country: 1524, Sep. 11—1585, Dec.; b. at the Château de la Poisonnière in Vendômois. At the age of nine, he was sent to the Collége de Navarre, but was soon removed; and entered the service of the Dauphin as page. Handsome, and excelling in all bodily accomplishments, he soon became a general favorite. When his master died (1536), he became attached to the household of the Duc d'Orléans, second son of the king; accompanied James V. of Scotland back to his kingdom, with his bride, Marguerite of France, 1538; and after nearly three years at the Scottish, and six months at the English court, he returned to France, and to the service of the duke. A little later, recovering from a serious illness, he found himself afflicted with deafness, which led him to resign the pursuits of arms for those of letters. With this view, he studied five years in the Collége de Coqueret, having previously acquired a knowledge of Latin and of several European languages. His own language, as a literary vehicle, was much considered by him. Familiar now with the masterpieces of Greece and Rome, he wished (true child of the Renaissance, as he was) to invest the national poetry with classic dignity and grace. Several of his fellow-students shared his opinions and enthusiasm; and 1549 one of these, Joachim du Bellay, published what may be called the first manifesto of the new school—which became known as the *Pléiade,* from its seven leading writers—the *Illustration de la Langue Françoise.* Doubtless some change in French literature was necessary, and R.'s movement was not without its benefits; but the most intelligent French critics now admit that it was too radical, too absolute: it broke abruptly with the national traditions and tendencies, and tended to fix that pseudo-classicism of style subsequently brought to disastrous perfection in the *splendida vitia* of Corneille and Racine. In 1550 R. himself appeared in the field with his *Amours* and *Quatre Livres d'Odes,* which called forth bitter, violent opposition, and equally unreasonable praise. Rabelais (q.v.) was conspicuous among the adversaries of the new school; but on the whole, the classic party had the best of the contest, as its efforts were in harmony with the general intellectual tendencies of the time. Besides, R. was a man to make powerful friends: Marguerite, sister of Henry II., granted him a pension; the illustrious Chancellor De l'Hôpital encouraged him; and both Henry II. and François II. covered him with honors and pensions. Such admiration produced in R. an extreme elation. In 1553 a new ed. of *Amours* was published; 1555 the first, and 1556 the second, vol. of his *Hymnes;* and 1560 an ed. of all his works to that time. During the religious wars that devastated France, R. made himself noted by violent attacks on the Huguenots. Twenty days after the massacre of St. Bar-

thoiomew, he published *La Franciade*, an epic fragment of a work to comprise 24 books; but after finishing 4, he discontinued his efforts in the epic-line. Yet such was the belief in his genius, that his attempt called forth new expressions of delight: Charles IX. gave R. the abbeys of Croix-Val and Bellozane, and the priories of Saint-Cosme, of Evailles, etc. But afflicted with premature infirmities, he retired to the abbey of Croix-Val, where he spent most of his remaining years in lettered ease. Queen Elizabeth of England sent him a set of diamonds, and Mary Stuart, from her prison, a set of plate worth 2,000 crowns, with the inscription:

À Ronsard, l'Apollon de la Source des Muses.

The best ed. of his works is Blanchemain's (8 vols. Paris 1857–67). See also Sainte-Beuve's *Œuvres Choisies de R.* (Paris 1828).

ROOD, n. *rôd* [from Eng. Rod, which see: Dut. *roede*, a measure of ten feet in land-surveying]: measure of surface, the fourth part of an acre, and containing 40 square poles or perches. It is quite different from the rood used in estimating mason-work, called sometimes the *square rod*, which contains $16\frac{1}{2} \times 16\frac{1}{2}$ ft., or $272\frac{1}{4}$ sq. feet.

ROOD, n. *rôd* [AS. *rod*, the cross: Fris. *rode*, gallows, cross: Ger. *ruthe*, a rod]: a cross; an ancient instrument of punishment, consisting of one rod laid at right angles over another. Specially, it denotes the figure of Christ's cross, and generally of the crucifix. The word is applied also to the actual cross on which the Lord Jesus suffered, though, when used to signify the relics of the true cross, it is commonly found with the prefix Holy, from which Holyrood at Edinburgh derives its name; but in its usual signification it denotes the large crucifix placed at the entrance of the chancel in most mediæval churches. On either side of the cross were commonly placed figures of the Blessed Virgin and St. John, in allusion to John xix. 26. The manner of placing the rood differed in different churches; it stood usually on a gallery or over the screen at the entrance of the chancel, which was called the Rood-loft or Rood-screen. In England, after the Reformation, the rood was, as a rule, removed from all churches; but in a few country churches it still remains in more or less perfect form. A very perfect example of the rood is in the great church of Louvain. By the Rood, by the cross, a form of words formerly used in swearing.

ROOF, n. *rŏf* [AS. *hrof;* O. Dut. *roef;* Russ. *krov'*, a roof; Serv. *krovnat*, thatched]: top or cover of a house or other building; inner side of a vault or arch; interior upper part; a house or dwelling: V. to cover or furnish with a roof; to shelter. ROOF'ING, imp.: N. the materials of a roof. ROOFED, pp. *rôft.* ROOFY, a. *rôf'i*, having roofs. ROOF'LESS, a. *-lĕs*, having no house or home. GABLE ROOF, roof like an inverted V. ROOF-TREE, the beam in the angle of a roof: the roof: familiar term applied to one's home. KING-POST ROOF, roof which is tied to the tie-beam by a king-post or piece to prevent the beam bending. HIP ROOF, roof with a slant on all four sides. M ROOF, double roof, such as is seen covering factories in the form of an inverted W. SHED ROOF, roof with one slope, as in a lean-to shed. ROOF OF THE MOUTH, upper part of the mouth; the palate.—The *Roof*, in building, varies in every climate and every age. In warm countries, such as India, flat roofs, covered with cement, are almost invariably used. The frequent allusions in the Bible to the house-top show that the roofs of Palestine were flat in ancient times, as they are now. Those of Egypt and Assyria (q.v.) also were flat, composed of wooden beams covered with thick layers of earth, forming an impenetrable protection from the fierce heat of the sun. In countries where the climate is milder, and rain more abundant, roofs sloping from a central ridge are the usual form: the Greeks and Romans constructed their roofs thus. Those of Greece were, in important works, covered with marble slabs, carefully grooved together, effectually to protect the interior from rain. In the common buildings of Greece and Rome, roofing-tiles are used.

In the rainy climate n. of the Alps, and largely in n. Europe and N. America, roofs of much steeper pitch are employed, more readily to throw off rain and snow. The angle at the ridge is commonly a right angle; and roofs slated in the usual way should never be less than $\frac{1}{8}$ of the span (or width between supports) in height. When large slates are used, $\frac{1}{4}$ of the span in height will suffice.

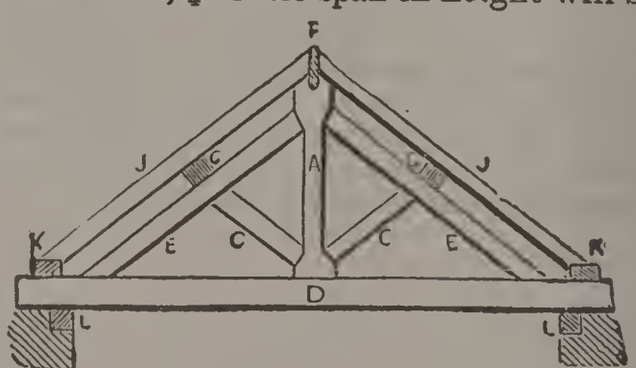


Fig. 1.

Roofs well constructed bind the walls together, and thus strengthen the building. To do this effectually, they must not be of too great weight, lest they crush the walls. The actual covering of the roof and its supports are therefore made as light as possible, and the strength is concentrated in principals or trusses. The following are the com-

modest forms of these trusses: fig. 1 represents a king-post roof (A being the king-post); fig. 2 a queen-post roof (B, B, being the queen-posts). The latter is used for wider

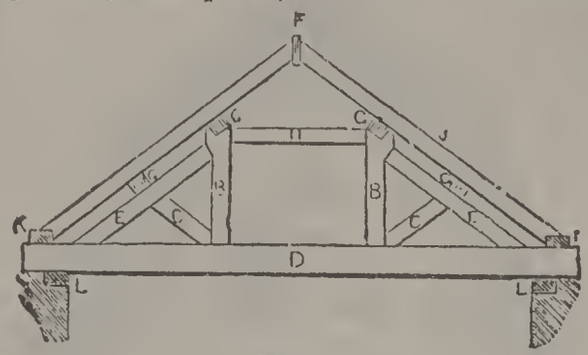


Fig. 2.

spans than the former, and has the advantage of leaving the centre of the roof clear of timbers, so that attic rooms may be introduced. The other members of the truss are named as follows: C, C, C, C, braces or struts; D, D, tie-beams; E, E, E, E, principal rafters; F, F, ridge-pieces; G, G, etc., purlins; these and the ridge-pieces are laid across from truss to truss, and carry the common rafters, J, J. H is a collar. K, K, the pole-plates, and L, L, the wall-plates, are laid along at the wall-head, to bind the wall and the feet of rafters together.

The above system of construction has been used from a very early time to the present day. The early Christian, and probably the old Roman basilicas, had exactly such roofs. In early Gothic times, roofs of this kind were made ornamental by carving the king-post and molding the tie-beam. During the Decorated style, an arch, or a series of cants (A, A), was introduced, as shown in figs. 3, 4, and 5. As the style advanced, curved braces were placed under the tie-beam, to support it; these were carved, and rested on elegant corbels, the spandrels between the braces and the wall being filled with tracery. In the Perpendicular style, the central part of the tie-beam is cut away, and the beautiful Hammer-beam (q.v.) roofs of the period become usual (see fig. 6): the roof of Westminster Hall, London, is one of the finest examples. These open timber-roofs are used both in churches and in halls, but chiefly in halls, the church roofs being frequently vaulted: see VAULT: also DOME.

Fig. 3.

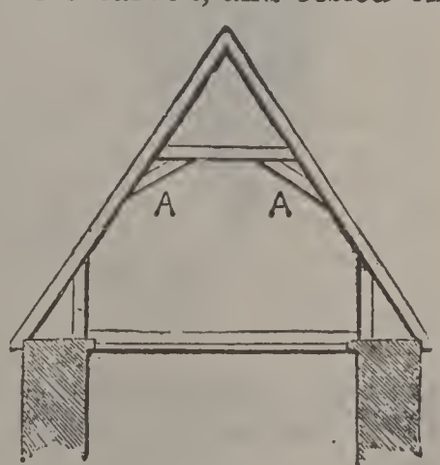


Fig. 4.

In modern times, when great spans have to be roofed over, combinations simil to those used in Lattice-bridges

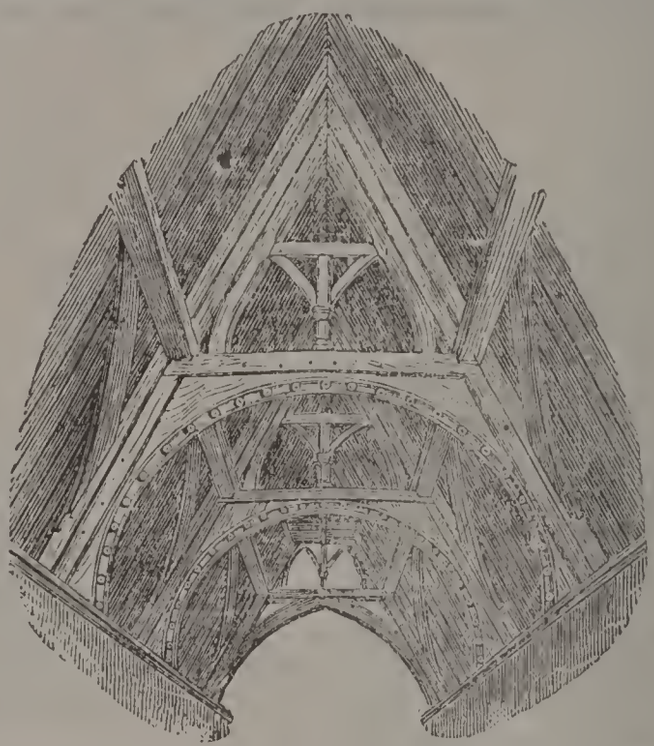


Fig. 5.

Fig. 6.

(q v.) are required. Recently, iron has been introduced, and, by means of it, spaces of great width can be roofed over.

ROOK, n. *rûk* [It. *rocco;* F. *roc,* the rook—from Pers. *rokh,* the tower in chess]: the castle in the game of chess.

ROOK, v.: for RUCK 2, which see.

ROOK, n. *rûk* [AS. *hroc;* Dan. *raage;* Sw. *roka;* Dut. *roek,* a rook: comp. Gael. *ròc,* to cry hoarsely; *ròcas,* a rook. L. *raucus,* hoarse]: bird of the crow family, having the base of the bill bare of feathers, and noted for its thievish propensities: a cheat; a sharper; a thief· V. to cheat. ROOK'-ING, imp. ROOKED, pp. *rûkt.* ROOKERY, n. *rûk'ĕr-ĭ,* a place where rooks congregate and build their nests: close assemblage of poor mean buildings inhabited by the lowest poor: a haunt of thieves, etc. ROOKY, a. *rûk'ĭ,* inhabited by rooks.—The *Rook* (*Corvus frugilegus*) is a species of Crow (q.v.) very common in s. parts of Britain, and found in many parts of Europe and Asia, even to Japan; about the same size with the common crow, but easily distinguished from it by the naked warty skin at the base of the bill, extending back rather beyond the eyes, and far down on the throat. Still more different are the habits of the birds, the common crow frequenting lonely situations; the R. choosing rather the neighborhood of human habitations. Moreover, while the common crow is solitary, the R. is gregarious; and very large companies often assemble in *rookeries,* making their nests in close proximity, generally in tall trees, the same tree often sustaining many nests. So far are they from disliking the companionship of man, that it is common for rooks to build their nests in trees that grow in the midst of great cities. A tree even in Cheapside, London, has been occupied by rooks' nests. Few cities or large towns in Britain are without rookeries, sometimes of considerable magnitude, one near Edinburgh having been computed to number 2,600 nests and 30,000 birds. The smoke seems disregarded by the birds. The R. is nowhere more abundant than in England and s. Scotland, but is rare in n. Scotland. Sometimes rooks make their nests in steeples, on vanes, etc., but rarely. They have been observed to avoid trees which are decaying and likely soon to be blown over—perhaps, however, on account of the state of their twigs—also trees that are marked on the trunk for cutting down. It is believed in some districts that they know Sunday, and are less timid of the approach of man on that day than on other days of the week. The nests of rooks are formed of twigs, lined with grass and fibrous roots; generally containing four or five eggs, of pale-greenish color, blotched with dark-greenish brown. During the nest-making time, rooks rob each other in a remarkable manner, and prodigious quarrels arise in rookeries on this account. Any pair attempting to found a separate colony on a tree far apart are apt to be assailed by the whole force of the rookery, and the nest pulled to pieces, its materials of course being carried off.

Farmers very often complain of them for rooting up grass and young corn, and for injury to young potatoes, turnips, etc.; but, on the other hand, it is urged that they are of great use by eating up wire-worms, cockchafer

grubs, and other insect larvæ, slugs, etc., and that the grass pulled by them is often that whose roots larvæ have already devoured. The truth appears to be that rooks in moderate numbers are very useful; but that it is possible to protect them too much.

The same rooks seem to take possession of their old nests year after year, repairing them, and not building new ones. The time of building and repairing nests, beginning in early spring, is one of prodigious clamor in the rookery. The male R. feeds the female assiduously during incubation, and sometimes takes her place on the nest. Both parents bring food to their young ones. The R. is capable of being tamed, and tame rooks have the imitative power of voice possessed by other birds of the same family. White, cream-colored, and pied rooks are occasionally seen; these peculiarities of plumage are due probably to disease.

ROOKE, *rôk*, Sir GEORGE: British admiral: 1650–1709, Jan. 24; b. near Canterbury. He entered the navy; was, at the age of 30, a post-capt.; and 1689 was promoted to rear-admiral. In 1692, in the memorable battle off Cape La Hogue, between the French fleet and the combined English and Dutch force under Admiral Russell, his services were most brilliant and dashing; and in acknowledgment he received the rank of vice-admiral of the red, the honor of knighthood, and a pension of £1,000 a year. His next important service was the destruction of a Spanish plate-fleet in the port of Vigo; and 1794, July, with Sir Cloudesley Shovel, he captured Gibraltar.

ROOM, n. *rôm* [AS. *rum;* Ger. *raum;* Goth. *rums;* Gael. *rum*, space: Icel. *ryma;* Ger. *räumen;* Dut. *ruimen*, to clear a space, to make room]: space; place or space unoccupied; an apartment of a house; station; place of another; stead; scope; opportunity; possible admission or mode; latitude; compass. ROOM'FUL, n. *-fûl*, as many as a room will hold. ROOM'Y, a. *-i*, having ample room; spacious. ROOM'ILY, ad. *-li*. ROOM'INESS, n. *-nĕs*, the state of being roomy; large extent of space; spaciousness. TO GIVE ROOM, to withdraw, to allow others to pass or be seated. TO MAKE ROOM, to open a space, way, or passage.

ROORBACH, n. *rôr'bâk* [from a fictitious extract from *Roorbach's Tour*, 1836, published for political purposes by an Amer. paper 1844]: falsehood; mis-statement; sensational article without any foundation, published, especially for political purposes, in a newspaper.

ROOSEVELT, *rôs'vĕlt*, ROBERT BARNWELL: born New York, 1829, Aug. 7. He studied law, began practice 1850, secured the establishment of the State Fishery Commission of N. Y. 1867, and was one of its members for 21 years, was active in the overthrow of the Tweed ring in New York, was elected to congress as a democrat 1870, and appointed U. S. minister to the Netherlands 1888. He is a member of the Amer. Association for Advancement of Science. Among other works, he has published *The Game Fish of North America* (1860); *The Game Birds of the North* (1866); and *Five Acres Too Much* (1869). D. 1906.

ROOSEVELT.

ROOSEVELT, *rôz'vĕlt*, THEODORE, LL.D.: twenty-sixth president of the United States; b. New York City, 1858, Oct. 27. He is descended from an early Dutch settler of Manhattan Island. His paternal grandfather was a wealthy merchant. His father, Theodore Roosevelt, a banker, was distinguished as a philanthropist. One of his uncles, Robert Barnwell Roosevelt, was prominent as a member of Congress and as a leader of "reform politics" in New York; was minister to the Netherlands; and was an enthusiastic sportsman. Others of the name distinguished themselves, and Roosevelt Hospital in New York stands as a memorial of the philanthropic spirit that has ever distinguished the family. One of his maternal uncles served in the Confederate navy and fired the last shot from the ill-fated *Alabama*, sunk by the guns of the *Kearsarge* off Cherbourg. His mother was descended from Archibald Bulloch, member of the continental congress, and the first Republican governor of Georgia. Theodore Roosevelt was sickly in his youth, but by systematic training and out-of-door life built up a rugged constitution. He was prepared for college in private schools; graduated from Harvard 1880; traveled in Europe and did some mountain climbing, and on his return began the study of law, but gave it up for politics; joined the Republican association of the 21st district, and in the fall of 1881 was elected to the state assembly. In 1883 he was re-elected, became the leader of the minority and was largely instrumental in carrying through the state civil service law and an act for the regulation of primary elections. In 1884 he was made chairman of the committee on cities; proposed an investigation of the government of New York; and carried through several reform measures, one of which made the mayor responsible for the administration of municipal affairs. In the same year he was chairman of the New York delegation to the national Republican convention, where he advocated Edmunds as a presidential candidate, but finally supported Blaine. On retiring from the legislature he bought a ranch in North Dakota, and for a number of years he spent his summers in hunting in the far West. For four years (1884-88) he was a member of the 8th regiment N. Y. N. G., becoming captain. In 1886 he was an unsuccessful candidate for mayor of New York, Henry George (Labor) and Abram S. Hewitt (Dem.) being his opponents, and the last named winning. For six years (1889-95) he was a member of the United States Civil Service Commission, and for two (1895-97) president of the Board of Police Commissioners, New York City, resigning to become assistant secretary of the navy. It was due to his foresight and management that the navy was in such admirable condition at the outbreak of the war with Spain. After war was declared he resigned his

portfolio, and with Dr. Leonard Wood, of the regular army, organized a regiment officially designated the 1st U. S. Volunteer Cavalry, but popularly known as "Roosevelt's Rough Riders," of which Wood became colonel, with Roosevelt second in command. It comprised men of all nationalities; college graduates, many of them noted athletes, ex-policemen, cowboys, frontier hunters, Indians, and New York club men, and it led the first fight at Siboney or Las Guasimas, 1898, June 24, and distinguished itself in the fighting at Santiago (July 1-3). On July 8 Col. Wood was promoted brigadier-general and Lieuntenant-colonel Roosevelt colonel. After the surrender he wrote a letter to General Shafter urging the immediate removal North of the troops, and later signed a "round robin" to the Secretary of War insisting that the army must be moved at once or perish. Upon his return to New York he was nominated for governor against the wishes of the "machine" Republicans and was elected, his plurality over Augustus Van Wyck (Dem.) being 17,786. As governor he reformed the administration of the canals, provided civil service reform, and established the principle of street-franchise taxation. He desired to serve a second term, but the Republican leaders of the State joined with western delegates in forcing upon him the vice-presidency (1900, June 21). Previous to the election he made an extended tour of the Western states. He received 292 electoral votes to Adlia E. Stevenson's 155, and in 1901, March 4, assumed official duties. Upon the death of Pres. McKinley, Sept. 14, Vice-President Roosevelt took the oath as president, pledging himself to carry out the policy of his predecessor. In his first message to congress (Dec. 3) he urged publicity as a remedy for the evils of trusts; advised the supervision and regulation by the nation of corporations doing an interstate business, and if congress lacked the constitutional power to pass such an act, the submission of a constitutional amendment to that end. On 1902, Feb. 18, he replied to the appeal of Admiral Schley; censuring that officer, and declaring that on the whole the court did substantial justice. In a special message to congress June 13, he urged the passage of a Cuban reciprocity bill. The president made an extended tour of the United States in the summer and fall, being received with enthusiasm everywhere. In his annual message (Dec. 2) he urged the need of keeping the army at the highest point of efficiency and of building up the navy; observed: "No independent nation in America need have the slightest fear of aggression from the United States," and asserted, "no policy ever entered into by the American people has vindicated itself in more signal manner than the policy of holding the Philip-

pines. In November 1904 he was elected for the full term by a plurality of over 2,000,000 votes, the largest plurality ever given any presidential candidate. For the events of his administration, see UNITED STATES, *History.* Mr. Roosevelt has been the recipient of many honorary degrees, holding, among others, that of Doctor of Laws, from Harvard, Yale, and Columbia universities. At the close of his term in 1909, Mr. Roosevelt went to Africa on a hunting and exploring expedition.

During his political life his pen has been constantly busy. He has written: *Hunting Trips of a Ranchman* (1883); a *Life of T. H. Benton* (1886); a *Life of Gouverneur Morris* (1887); *Ranch Life and the Hunting Trail* (1888); a *History of the City of New York* (1890); *Essays on Practical Politics* (1892); *The Wilderness Hunter* (1893); *The Winning of the West* (1889-96); *American Ideals* (1897); *The Rough Riders* (1899); a *Life of Oliver Cromwell* (1900); *The Strenuous Life* (1900); *California Addresses* (1903); *Maxims of Theodore Roosevelt* (1903); *Addresses and Presidential Messages* (1904). His works appeared in 8 vols. in 1902. He wrote also in *Hero Tales from American History* (1895; with H. C. Lodge); and *The Deer Family* (1902; with several others). The best of his books is *The Winning of the West,* the narrative of the conquest of United States territory w. of the Alleghanies, which takes good rank among authoritative works on United States history.

ROOST, n. *rôst* [AS. *hrost;* O. Dut. *roest,* the seat or perch of a bird, so called from the *rod* or perch]: the pole or perch on which a bird settles itself to rest: V. to sit or sleep on the branch of a tree, or on any other thing, as a bird at night. ROOST'ING, imp. ROOST'ED, pp. ROOST'ER, n. *-ėr,* a cock. AT ROOST, in a state of rest or sleep.

ROOT, n. *rôt* [Icel. *rót,* a root; *róta,* to grub up: AS. *wrotan;* Dut. *wroeten;* Dan. *rode,* to root, as a pig or a mole: Norw. *rota,* to dig, to dabble]: that part of a plant which enters into and (in most cases) fixes itself in the earth or other source of nutriment, and through which the plant is nourished (see ROOT, in Botany): a plant whose root is esculent; the part of anything resembling a root in manner of growth; the lower part of a thing: the original or cause of anything; first ancestor; impression; durable effect: in a *language,* that element which serves as a common basis to one or more words, the root being contained in the language itself, or in its older forms derived from a foreign language (see ROOT, in Philology): in *alg.,* the value of an unknown quantity in an equation (see ROOT, in Algebra): in *arith.,* any number which multiplied by itself produces a square or other power—that *number* is the *root* of the quare or power: V. to plant or fix in the earth; to

enter the earth; to take root; to impress deeply; to tear up from the ground; to tear up the earth with the snout, as swine; to extirpate, with *up*. ROOT'ING, imp. taking root; turning up the earth with the snout, as swine. ROOT'ED, pp.: ADJ. fixed and grown by roots; deep; radical. ROOT'EDLY, ad. *-lĭ*, in a rooted manner; strongly. ROOT'EDNESS, n. *-ĕd-nĕs*, the state or condition of being rooted. ROOT'Y, a. *-ĭ*, full of roots. ROOT'INESS, n. *-ĭ-nĕs*, the state of being full of roots. ROOT'LESS, a. *-lĕs*, without a root. ROOT'LET, n. *-lĕt*, a little root; a radicle. ROOT-LEAF, in *bot.*, a leaf growing immediately from the root. ROOT-STOCK, or RHIZOME (*Rhizoma*), in *bot.*, a stem prostrate along the ground, partially covered with soil; sending out roots from its lower side, and leaf-buds from its upper. The common yellow iris affords a perfect example of it. Many ferns have root-stocks. The root-stock, often regarded as a creeping root, is really not a root, but a stem. ROOT-CROP, a crop of esculent roots, as the potato or turnip, etc. TO TAKE ROOT, to become planted or fixed; to increase and spread. TO TEAR UP BY THE ROOT, to eradicate.

ROOT, in Algebra: any value of the unknown quantity in an equation, which will render both sides of it identical: see EQUATION; INDETERMINATE PROBLEMS; IRREDUCIBLE CASE; ETC. The determination of the roots of equations, either formally or actually, constitutes the greater portion of the science of algebra, while the approximation to roots of those equations whose degree is still beyond a general solution (4th and upward) forms almost a separate branch of itself. Roots are divided into various classes; they are *real* when they consist of numerical quantities positive or negative; and *imaginary* when they assume the form $a + b\sqrt{-1}$.

ROOT, in Botany; sometimes designated as the *descending axis* of a plant: that part by which a plant enters for sustenance into its original nutrient medium, and by which in most cases it is anchored in the soil. The root is developed in the germination of the seed, at or about the same time with the stem, and forces its way downward as the stem grows upward. The root differs from the stem in the irregularity of its ramifications, in the lack of a central pith, of buds, of scales, or of scars to indicate their former presence, and in the lack of stomata. The axis of the root giving off branches, these finally sub-divide into *fibrils*, which are little bundles of annular ducts, or sometimes of spiral vessels, incased in woody fibre, and covered with a lax cellular integument. The apex of each fibril is called sometimes the *spongiole:* it consists of extremely lax cellular tissue, and has the property of absorbing fluids with great rapidity, thus subserving the nourishment of the plant: see ENDOSMOSE.—Aerial roots occur in some plants, as in some *Epiphytes*, the Banyan, Mangroves, etc.; by which nourishment is derived from the air, in addition to that obtained through the leaves and bark, or by which the branches seek to connect themselves anew with the ground, for support and nourishment; and many plants,

as Willows, produce adventitious roots very readily, when any portion of the stem or branch is embedded in moist soil, of which advantage is taken for their artificial propagation.—The central axis of many roots goes deep into the ground in a tapering manner, forming what is called a *tap-root;* other roots have the descending axis very short, and are called *fibrous.* The roots of some plants spread very widely; those of others occupy a very limited space. The roots of coniferous trees and palms are very small when compared with the appearance of the tree above ground.—Tap roots sometimes assume a conical form, as in the carrot; others are variously developed in thickness at the upper part, as in the turnip and radish. TUBERS (q.v.), BULBS (q.v.), and CORMS (q.v.) are peculiar developments, evidently intended to secure a store of nourishment for the plant, but which also are available for the use of man.—Esculent roots are numerous, and many roots also contain secretions either peculiar to themselves, or more abundant than in the other parts of the plant, and become therefore useful in medicine or in the arts; while some are very poisonous. The roots used for food, besides the tubers, bulbs, and corms above mentioned, are generally those which are thick and fleshy. The plants to which they belong are of very different genera and orders—some of nat. order *Cruciferæ*, e.g., Turnip and others of the genus *Brassica*—some of order *Chenopodiaceæ*, e.g., Beet and Mangel-wurzel—some of order *Umbelliferæ*, e.g., Carrot, Parsnip, etc.—some of order *Leguminosæ*, e.g., *Pachyrhizos angulatus*, cultivated in all parts of the E. Indies, and *P. trilobus*, cultivated in Cochin China. In many of the lower classes of plants, particularly the Algæ, there is no root whatever, though often the plant is attached by a base.

ROOT, in Philology: that part in a word which is common to a group of allied words—the germ out of which they all have sprung. It is arrived at by taking away the formative parts—the suffixes and affixes—and reversing any change that their presence may have caused. Thus, in co-in-*cid*-ence, the root-syllable is *cid*, the primary form of which in Lat. is *cad*, to fall. It is seldom that this analysis can be successfully performed with only one language; in order to get at the true root, the corresponding words in all the languages of the same family must be compared. Thus, in the English words *story*, *history*, *historical*, *historically*—*histor* would seem to be the root; but by comparing the Greek with the Lat. and Skr., we arrive at the real root, a syllable *vid*, meaning to see or know, of which the Eng. (to) *wit* (wist) is only another form. And even after such a process, we are not sure that we have arrived at the original and most simple form. Thus, Eng. *yoke*, Lat. *jugum*, come from the syllable *jug*, to join, seen in Lat. *ju(n)go*, Gr. *zeugo;* and this might be rested in as the root, were there not a simpler form, *ju*, preserved in Skr., and having the meaning of mingling or being together; this, which may be taken as the primary root, gives rise to the two secondary roots or modifications, *jug*, to join, and *yudh* to fight (i.e., to join battle).

The roots of the Aryan languages are always monosyllabic, as *i*, to go; *ga*, to go; *ad*, to eat; *vak*, to speak; *star*, to strew. Roots, in the Aryan languages, never enter into speech in their pure and simple form; to make them words, they almost always take on the addition of a pronominal element. Thus, the reduplicate root *da-da*, having the sense of giving, becomes, by the addition of *mi*, my, the word *da-dâ-mi*, I give; *vak*, to speak, by affixing *s* (for *sa*, that), becomes *vaks*, in Lat. *vox* (*voks*), voice (i.e., that speaking). See Inflexion; Philology; Onomatopœia.

ROOT, Elihu, ll.d.: American lawyer and statesman: b. Clinton, N. Y., 1845, Feb. 15. He was graduated from Hamilton College in 1864, and from the New York University Law School in 1867. In the latter year he was admitted to the bar and entered upon the practice of his profession in New York. In 1883 he was appointed United States District Attorney for the southern district of New York; in 1894 was a delegate-at-large to the New York State Constitutional Convention, and was chairman of the judiciary committee. He was appointed secretary of war by President McKinley in 1899 and reappointed in 1901. Though his marked ability as a lawyer was recognized by his colleagues, he was but little known outside New York state at the time of his appointment to the War Department, and the choice excited considerable surprise. He found the work of his department in disorder, with constant rivalry among its various bureaus, but by strict discipline, adherence to civil-service rules, and establishing a system of promotion for merit, he soon brought order into the administrative departments, and turned his attention to the organization of the army. In this field he brought about a number of improvements, chief among which are the assimilation of the militia with the regular army and the creation of the General Staff. He also had charge of the military administration of Cuba and the Philippines; and while he was severely criticized for not trying to prevent cruelties in the conquest of the Philippines, he must also be given credit for the policy of the army in enforcing sanitary measures, and preparing for independent government in Cuba; and for the restoration of order and preparation for civil government and the work of the Philippine Commission in the Philippines. In January, 1904, he retired from the secretaryship to resume the practice of law. In July, 1905, he was appointed Secretary of State in Mr. Roosevelt's cabinet and served until Feb., 1909, when he resigned to enter the upper house of Congress as senator from New York, succeeding Mr. Platt.

ROOT, *rót*, George Frederick, mus. doc.: born Sheffield, Mass., 1820, Aug. 30; d. 1895, Aug. 6. When only 17 years of age he became a teacher of music in Boston, removed to N. Y. 1844, studied in Paris 1850, and after-

ward removed to Chicago. He wrote largely for the musical press, published various instruction-books, cantatas, collections for church choirs, and works on teaching; and numerous popular songs, including *Rosalie, the Prairie Flower; Tramp, Tramp, Tramp, the Boys are Marching;* and *There's Music in the Air.*

ROOT-MIL'DEW: term designating no well-determined species of fungus, but certain *mycelia,* which infest the roots of peaches, apples, roses, currants, etc., and cause their death. The tree or shrub is often suddenly blighted, from apparently perfect health. The roots are found more or less decayed, and covered with filmy white threads. The *mycelium* is supposed to belong to species of *Polyporus.*

ROPE, n. *rōp* [Icel. *reip,* a rope: Dut. *reep* or *roop,* a cord or rope: AS. *ráp,* a rope]: cord or line composed of several strands twisted together; small cable (see below): a row of things depending, as of onions: V. to draw out or extend into a string or thread by means of a glutinous or adhesive quality; to draw in by trick or to inveigle into a thievish or fraudulent operation. Ro'PING, imp.; N. the state or quality of being glutinous and adhesive. ROPED, pp. *rōpt.* ROPY, a. *rō'pĭ,* stringy; adhesive. Ro'PINESS, n. *-nĕs,* aptness to draw out into strings or threads without breaking; the partial viscosity and roping of syrupy liquors. Ro'PERY, n. *-per-ĭ,* a place where ropes are made: in *OE.,* rogues' tricks. Ro'PISH, a. *-pĭsh,* tending to ropiness. Ro'PER, n. *-per,* a ropemaker. ROPE-DANCER, one who walks and performs feats on an extended rope. ROPE-LADDER, a ladder made of ropes, hung over a ship's side, or otherwise used, as being easily portable. ROPEMAKER, one who makes ropes. ROPEMAKING, n. the making of ropes. ROPEWALK, a long covered walk where ropes are extended as they are spun. ROPE-YARN, yarn consisting of single threads for making ropes. ROPE OF SAND, a band easily broken; anything without force, as a tie or bond of union. ROPE-TRICK, in *OE.,* a trick or deed which deserves the rope or halter.—*Rope,* generally any cordage having circumference of an inch or more, is made usually of vegetable fibres, though in recent years wire-rope has come into extensive use. The fibre most used for rope is hemp; but large quantities of plantain fibre, called Manila-hemp, made from the leaf-stalks of *Musa textilis,* also are employed, especially for large ropes on ships. Ropes are made by hand in places called ropewalks. The spinner has a large bundle of the fibre loosely gathered round his waist, from which he pulls out a few fibres, and attaches them to a hook in the turning wheel or whirl, which is stationary, and is worked by an assistant. Experience teaches him what number of fibres to draw out, and how to twist them so as

to hold firmly on to the hook. He then walks slowly backward down the rope-ground, gradually drawing out or regulating the pulling out of the fibres so as to make an equal yarn, which receives the necessary twist from the whirl. When he has reached the end of the walk, another spinner takes the yarn from the hook of the whirl, and fixes it to a reel, which is then set in motion; and he attaches a second portion of hemp from his own supply to the hook, and proceeds down the walk as the previous one had done. In the mean time, the first spinner gradually walks up the ground, carefully guiding his length of yarn as it is wound on the reel. When he reaches the reel, it stops, and he waits until the second spinner's length is completed. He then in his turn takes it off the hook, and twists it on to his own; and the reel, being again started, receives the additional length from the second man, and so on until the full length required is made up. The next operation is called *warping*, and consists in stretching out the number of yarns required for a rope. These all are slightly twisted again separately, and stretched to an equal length. Then, if they are intended for tarred ropes, each yarn is drawn separately, either lengthwise or in a hank, through a kettle of hot tar. The superfluous tar is removed by drawing it through a hole lined with oakum. In the next process, called *laying*, two or more yarns are attached to hooks on a whirl, so that when it is turned they will be twisted together the contrary way of the original twist that they received in the first spinning. When this is done, it is called a strand. Then as many of these strands as are required for the rope are stretched at full length, and are attached at each end to whirls. One of the whirls has but one hook, to which all the strands are attached; the other has as many hooks as there are strands, one always being central, and a strand is attached to each. The whirls are then put in motion, but in opposite directions, and this causes the outer strands to be laid with great regularity and firmness around the central one. Such is the ordinary process of ropemaking; but machines have been invented which produce ropes with such mathematical precision that the strength of the rope may be calculated with great exactness. In some cases there are three 'preparation-machines,' the first of which is a heckling-machine; and the spinning-machine also coils the spun rope on large bobbins. The yarn is usually spun with a right-handed twist. Yarns are then combined to make a left-handed strand; and three or more strands are joined to make a right-handed rope. A rope of three strands is stronger than a corresponding one of four strands, as in the latter the strand in the centre will break first. Before breaking, a rope stretches from $\frac{1}{7}$ to $\frac{1}{5}$. A good hempen rope should stand a strain of more than 9,000 lbs. to the sq. inch.

Large ropes are either what is called *cable-laid* or *hawser-laid*. The former consist of three large strands, each made up of three smaller strands. A cable-laid rope of eight inches circumference is made up in this way of nine strands, each containing thirty-seven original yarns, or altogether

333 yarns. A hawser-laid rope consists of only three strands, each containing a sufficient number of yarns to make up the required thickness. The numerous lives and the vast property depending on the efficiency of ropes employed in shipping have brought great ingenuity and care to bear on the manufacture. One very great improvement of modern times has been the introduction of wire-ropes, now extensively used in rigging ships and for other purposes. They are generally of iron wire, sometimes but not always galvanized; and twisting is effected in the same way as the strands of a hempen rope are laid together.

ROQUE, *rok*, SAINT: born early in the 14th, or near the end of the 13th c., at Montpellier; of noble family; d. 1327: popular saint of the Rom. Cath. Church in France; patron especially of those sick of the plague. Of his history, nevertheless, few particulars have been preserved. Having undertaken a pilgrimage to Rome, he was surprised on his way through Italy by an outbreak of the plague at Piacenza, where he devoted himself with generous zeal to the care of the victims. Falling sick of the plague himself, and abandoned by man, he contrived to drag himself to a neighboring wood, where a dog used to lick his sores; and it pleased God to restore him to health.

Roquelaure—Time of George II.

ROQUELAURE, n. *rŏk-ĕ-lawr'* [after the Duke de *Roquelaure*]: a short cloak or surtout, made to button from top to bottom, much used in the beginning of last century: also ROQUELO, *rŏk'ĕ-lō*.

ROQUEPLAN, *rok-plŏng'*, JOSEPH ÉTIENNE CAMILLE: painter: 1803–1855, Sep. 29; b. Mallemort, France. He studied painting under eminent masters, at the age of 19 commenced exhibiting his work, and 1827 became widely and favorably known by his illustrations of characters from the romances of Sir Walter Scott. He gave much attention to landscape-painting, and reached a high position among the French artists of his day. Among his famous works were the *Amateur Antiquary* and *The Well near the Tall Fig-tree*. He died at Paris.

RORAIMA, *ro-rī'mâ*, MOUNT: wonderful table-topped sandstone mountain, near the w. border of British Guiana, lat. 5° 9′ 40″ n., long. 60° 48′ w. With its companion, Kukenam, it constitutes an extraordinary formation of two pinkish sandstone tables—Mt. R. being 12 m. long. First sloping gradually upward from 4,925 to 7,759 ft. above sea-level, Mt. R. next rises 2,000 ft. more in a stupendous perpendicular cliff, down which dash foaming cataracts, one being 2,000 ft. high, prob. highest in the world. Mt. R. was scaled first by Mr. E. F. Im Thurn, 1884, Dec. 18.

RORAL, a. *rō'ral* [L. *roralis*—from *ros, roris,* dew]: pertaining to dew; consisting of dew; dewlike; dewy; also RORIC, a. *rō'rĭk* [L. *ros* (root *ror*), dew, and term. *-ic*], used in the phrase RORIC FIGURES: see COHESION FIGURES.

RO'RER, SARAH TYSON: American teacher of domestic science: b. Richboro, Pa., 1849, Oct. 18. She was graduated from the academy at East Aurora, N. Y., and was married in 1871 to W. A. Rorer. She was for many years principal of the Philadelphia School of Domestic Science, and has lectured widely. She was editor and part owner of *Table Talk* in 1886-92, edited *Household News* in 1893-7, and since then has been on the editorial staff of the *Ladies' Home Journal.* She is also director of the Pennsylvania Chautauqua School of Domestic Science. Her publications include: *Mrs. Rorer's New Cook Book; How to Use a Chafing Dish; Colonial Cookery; A Book on Diet and Cookery;* etc.

RORKES DRIFT: a post station on the Tugela river, in Natal, Africa, memorable for the heroic defense of a British force of 80 men under Lieutenants Bromhead and Chard. They were guarding the hospital and the commissariat, when they were attacked by a Zulu force of 4,000, the night of Jan. 22, 1879. The British used biscuit boxes and rice bags for a barricade, and kept the enemy at bay until relieved the morning of the 23d. Six times in succession the little force drove out Zulu warriors who had got within the barricade.

RORQUAL, n. *rör'kwal* [Norw. *rorqualus,* a whale with folds], (*Balænoptera,* or *Physalus*): genus of Cetacea of the same family (*Balænidæ*) to which the Greenland whale belongs; but distinguished by having a dorsal fin—not large, and with its point directed backward; also by the form of the head, which, instead of having the upper jaw much arched, as in the Greenland whale, has it in the skeleton nearly straight, the plates of baleen or whalebone being therefore much shorter, while along the throat and belly are many longitudinal folds, allowing of the distention of the integuments so as to form a great pouch for reception of water and prey, to be afterward sifted by the plates of baleen. For a long time these folds of the throat and belly were a puzzle to naturalists, but their use seems now ascertained. The form is more elongated than in the Greenland whale, and, as the girth of the largest rorquals has been found equal to that of the largest Greenland whales, the rorquals appear to be the largest of the Cetacea, and indeed of all animals at present existing in the world. The species, which in general are called Finner whales, include the Common Rorqual (*B. musculus*), 60-70 ft. in length; the Blue Rorqual (*B. Sibbaldii* or *maximus*), 80 ft.; Rudolphi's Rorqual (*B borealis*), 50 ft.; the Lesser Rorqual (*B. rostrata*), 30 ft.; all these inhabiting the north Atlantic. In the Pacific occurs the Sulphur-bottom whale

(*B. sulphurea*). Individuals of one or another of the Atlantic species are occasionally stranded on our coast, or towed in by vessels; and skeletons may be seen in the larger museums. The Blue Rorqual is dark bluish-gray, whitish beneath; it is found in the arctic seas, visiting also those of the n. temperate regions. When it comes to the surface of the water to blow, it does not lie motionless, as the Greenland whale usually does, but swims at the rate of about 5 m. an hour; and in blowing, it makes a prodigious noise. Its speed, when harpooned, is very great. Scoresby mentions an instance of one carrying out 3,000 ft. of line in a minute. It is not easily captured; and whalers dislike it, because the Greenland whale is seldom found near it, while its own value is very inferior, owing to the comparative thinness of the blubber, and the shortness and inferior quality of the whalebone. It is, however, an important object of pursuit to the Laplanders and Greenlanders, who exhaust it by assailing it with weapon after weapon, and finally divide the spoil. A large rorqual yields 4,000 gallons of oil.—The rorqual does not feed so exclusively on small prey—acalephæ, mollusks, etc.—as the Greenland whale. Its gullet is much wider, and it preys much on fishes, the shoals of which it follows into bays and estuaries, devouring them in multitudes.

ROSA, *rō'zâ*, Euphrosyne Parepa (Parepa-Rosa): soprano singer: 1836-1874, Jan. 21; b. Edinburgh. Her father was a native of Walachia. Her mother, Elizabeth Seguin, trained Rosa to be a singer, and placed her under the tuition of Crescentini, Panseron and Bordogni. Her *début* was at Malta 1855 as Amina in *La Sonnambula,* and she then took the stage-name Parepa. She married Capt. Carvell, ex-officer of the Brit. E. India Co.'s service, 1863, and then quit the stage; but was left a widow 1865, and having lost her property by an unwise investment, was obliged to return to her profession. She made the tour of the United States 1865, and again 1866-7. Having married Carl Rosa, violinist, during the latter tour, she and her husband organized an Eng. opera company on their own account, and made tours in this country 1869-71. During the season of 1872-3 she sang in It. opera at Cairo.

RO'SA, Mon'te. See Monte Rosa.

RO'SA, Saint: saint of the Rom. Cath. Chh.: 1586-1617, Aug. 24; b. Lima, Peru; sometimes called St. Rose of Lima. Her parents, who were wealthy Spaniards, had her christened Isabel, but gave to her in childhood the pet name of Rosa, by which she was afterward known. They lost their property, and were supported by her labor, while she was living the life of a recluse, and she eventually entered the third order of St. Dominic. She was canonized by Pope Clement X. 1671, and her feast is Aug. 30. She is the only saint of American birth. She died at Lima.

RO'SA, Salvator: renowned painter of the Neapolitan school: 1615, June or July—1673, Mar. 15; b. Renella, in the neighborhood of Naples. His first instructor was Francesco Francaziani, who had married his sister. His father died when R. was aged 17, leaving his family in poverty; and R.'s earliest landscapes were sold for a few pence; but some of them attracted the notice of Lanfranco, who, purchasing them, enabled and encouraged the young artist to pursue his studies. He became a pupil of Aniello Falcone, painter of battle-pieces, and afterward a pupil of Spagnoletto. Having gone to Rome, he was employed to paint an altar-piece and other works by the Neapolitan cardinal, Brancacci, and he accompanied Prince Carlo de' Medici to Florence, and executed several important works for him. He finally settled in Rome 1638, and died there. Salvator has great reputation as a painter, due mainly to his landscapes, which, though faulty in many respects, arrest attention by originality in subject and treatment, being generally representations of wild and savage scenes, executed with freedom and decision, and at times with grandeur. Salvator executed numerous etchings, highly characteristic of his peculiar style. In art, R. is regarded as one of the leaders into the modern era of romance and picturesqueness.—In disposition, R. was gay and jovial, though not vicious according to the standard of those times: he was generous, though vain of his own performances; and kind, though sharp of tongue. Indeed, he earned a rank among satirists by his rough, denunciatory, but brilliant *Satires*, published nearly half a century after his death.

ROSACEA, *rō-zā'sē-a*, or Gutta Rosea, or Acne Rosacea: disease usually appearing first at or near the end of the nose; in some cases confined to the nose, in others extending to the cheeks, forehead, chin, or even the whole face. The skin in the part affected assumes a deep-red color, which usually disappears after a time, but returns either on no special provocation, or in consequence, apparently, of some gastric disturbance, and after a time becomes permanent; pustules of acne—a chronic pustular disease of the skin—now appear, and their yellowness contrasts strongly with the redness with which they are surrounded. The skin of the diseased part becomes irregularly swollen, and is marked with blue or red streaks, caused by congestion and enlargement of the capillaries; the whole surface, in a severe case, presenting a very disagreeable and repulsive appearance. This affection is no doubt often a result of intemperate living, but it may occur in persons of regular habits. Disorder of the digestive system is so often associated with it as to exclude the idea that the combination is accidental. The disease is confined almost exclusively to persons in middle or advanced life, and women are liable to it about the period of the 'change of life:' moreover it has occasionally been observed to be hereditary.—The general treatment consists in administration, under professional direction, of the compounds of iodine and mercury (singly or con-

joined) in alterative doses, and Donovan's Solution has been especially recommended; and a nourishing but bland and non-stimulating diet is prescribed. In the early stages the local treatment should be soothing: emollient lotions—e.g., emulsion of bitter almonds, cream, glycerine, etc.,—may be occasionally used during the day, and in severe cases a bread poultice may be applied at night. When the affection becomes indolent, the emollients should be gradually replaced by stimulating applications, such as Eau de Cologne, or others more powerful, as the physician may prescribe; and at a still later stage, iodide of sulphur ointment, in the proportion of 15 grains or a scruple of the iodide to an ounce of lard, is highly commended. When the disease is of long standing, it sometimes defies all known remedies.

ROSACEÆ, *rō-zā'sē-ē:* natural order of exogenous plants, containing many species of great usefulness, and many in high esteem for beauty. It contains trees, shrubs, and herbaceous plants, natives chiefly of cold and temperate regions, and far more abundant in the n. than in the s. hemisphere, including nearly all of our most esteemed fruits. As a feature in autumn cultivated landscape, they are of interest as retaining their foliage and its greenness very late in the season, though a few, like wild briers, change their color; one, the Evergreen Thorn, is characterized by its name. Within the tropics, they are found chiefly, but not exclusively, in elevated situations. The leaves are alternate, have stipules, and are either simple or compound. The flowers are generally hermaphrodite, but sometimes unisexual; the inflorescence is various. The calyx is 4–5-lobed, generally 5-lobed; the petals as many as the divisions of the calyx, or occasionally wanting, perigynous. The stamens are few or many, arising from the throat of the calyx; the ovary sometimes solitary, sometimes there are several ovaries; each one-celled, with a lateral style; or a number of ovaries are united into a many-celled pistil; the ovules generally two or more. The fruit is sometimes a drupe; sometimes a pome; sometimes follicular; sometimes an achenium; sometimes a heap of achenia, or of one-seeded berries; sometimes a heap of achenia, covered with the fleshy tube of the calyx.—This nat. order contains at least 1,000 known species; but in some of the genera, as *Rosa* and *Rubus*, the determination of the species is difficult, and varieties —sometimes reckoned species—are numerous.—The order, as generally received, is divided into a number of suborders, several of which have by some botanists been elevated to the rank of distinct orders, as *Amygdaleæ, Pomaceæ, Sanguisorbeæ.* See also Rose: Rubus: Strawberry: Potentilla: Tormentil: Agrimony: Geum: Spiræa: Cusso: etc.: also Plum: Pyrus: etc.

ROSAMOND, *rŏs'a-mond,* usually Fair Rosamond: daughter of Sir Walter Clifford, and mistress of Henry II., King of England; died 1177. There are many legends regarding her. Of these, some, like those which claim that she was the mother of Geoffrey, who became abp. of York, and of William Longsword, who was Earl of Salisbury, had no foundation in fact; while those relating to her concealment by the king and her murder by the queen are highly improbable. She was noted for her beauty; was still in her girlhood when she died; and was buried in a church connected with a nunnery at Godstow; but 1191 her remains were removed by order of the bp. of Lincoln and were interred outside its walls.

ROSANILINE, n. *rō-zăn'ĭ-lĭn,* or Roseine, n. *rō'zĕ-ĭn* [*rose,* and *aniline*]: one of the aniline dyes, prepared by heating aniline with arsenic acid; a dye of a rose or red color.

ROSARIO, *rō-sâ'rē-ō:* town of the Argentine Republic, on the right bank of the Parana, 170 m. n.w. from Buenos Ayres, 210 m. by river. It is the most important town on the Parana, and is rapidly increasing in population and commerce. The annual value of merchandise imported direct sometimes exceeds $7,000,000; the exports, mainly wool, hides, and bones, are sent mostly to the United States. R. is the terminus of a railway to Cordova. Pop. 112,460.

ROSARY, n. *rō'zą-rĭ* [F. *rosaire,* a rosary—from L. *rosārĭus,* pertaining to roses; *rosārĭum,* a rose-garden—from L. *rosa;* Gr. *rhodon,* a rose: It. *rosario,* a rosary]: anciently, a rose-garden, or a rose-bush. It denotes sometimes a garland of roses, or any chaplet; thence a compendium of literary 'flowers'—an anthology. The word is appropriated specially to a string of beads used as aids in devotion. Rosary of the Blessed Virgin, in the Rom. Cath. Church, a very popular form of devotion, whose characteristic is the use of beads to reckon the number of repetitions of a certain prayer. The name rosary has been variously traced either to the title 'Mystical Rose,' one of the titles under which the Blessed Virgin is addressed in the Litany (q.v.), of Loretto or to St. Rosalia's wreath of roses, well known in sacred art, or to the beads being originally made commonly of rosewood. The origin of the devotion itself is popularly traced to St. Dominic (q.v.), and doubtless truly as regards its popularization in its present form; but its characteristic use of beads is of far greater antiquity: see Bead. A similar use of beads exists among the Mohammedans; but it appears that the practice existed among Christians before the time of Mohammed. Originally the prayer so repeated was the Lord's Prayer; but, in the 11th and 12th c., the angelical salutation: 'Hail, Mary!' etc., was added to the 'Our Father.' The rosary, though called of the Blessed Virgin Mary, is a series of 15 prayers, founded on the chief mysteries of the incarnation and passion of our Lord, interspersed with repetitions of the 'Our Father,' the 'Hail, Mary!' and the ancient doxology. It

consists of three parts, each of which contains five so-called mysteries (called also 'decades,' from the ten 'Hail, Marys'), consisting of (1) a 'meditation,' briefly proposing the mystery which is to be meditated upon; (2) one 'Our Father;' (3) two 'Hail, Marys;' (4) one doxology; (5) a prayer begging for the special grace or fruit appropriate to the particular mystery: thus the whole rosary comprises 15 'Our Fathers' and 'Doxologies,' and 150 'Hail, Marys.' The 'Greater Rosary' consists of the recitation of the whole 15 mysteries, with their component prayers: the 'Lesser Rosary' consists of one of the three parts, or of five mysteries: the 'Living Rosary' is recited by an association of 15 individuals, each engaging to say daily one mystery. When recited publicly, the prayers are repeated alternately by the priest, or other person presiding, and by the congregation. There are various forms of these devotions in different countries. The rosary has been sanctioned and recommended by numberless popes and other ecclesiastical authorities; and Indulgences (q.v.) have been granted to persons reciting it with proper dispositions. It is regarded by Rom. Catholics as one of their most excellent forms of prayer, and as placing the devotion to the Virgin Mary on its true footing—that of a devotion to the incarnation and death of her Son, Jesus Christ. It is expressly adapted (as accompanied by special instructions) for the poor and the ignorant.

The mechanical instrument for this devotion is also called rosary. It consists of a string of beads, equal in number to the 'Our Fathers' and 'Hail, Marys' which are recited—the 'Our Father' beads being of larger size—one of which is passed through the fingers at each recitation of the prayer, to prevent errors of memory. The beads are of various material—berries, wood, stone, ivory, metal, etc.; and are often of costly workmanship, and of considerable intrinsic value. They are blessed for the use of the people by the pope, by bishops, and by others authorized.

ROSAS, *ro'sâs*, Don Juan Manuel, President of the Argentine Confederation: 1793, Mar. 30—1877, Mar. 14; b. Buenos Ayres; descended from an ancient family of the Asturias. He entered the army of Buenos Ayres, and 1829 rose to be gov. or capt.gen. of his native province. In 1835 he recommended the election of a single president for the whole Argentine Confederation, which was falling to pieces through feebleness of its local governments; and the choice fell upon him. Intestine commotion subsided under his rule, industrial resources were developed, and foreign commerce rapidly increased. The other states, however, became jealous of the growth and power of Buenos Ayres, which had been made the capital; and R. was accused of a design to advance unduly his native state and city. In his attempt to compel Paraguay to join the Confederation, R. became involved in unsuccessful war with Brazil; also his policy led him to an attack on Montevideo, for whose protection England and France interfered. His rule had by this time become so oppressive that the

subject states revolted, selected Don J. J. Urquiza as their pres. and gen., and defeated R. in a battle at Monte Caseros, 1852. R. fled to England and resided there till his death.

ROSCELIN, *ros-lăng'* (or ROSCELLI'NUS, or ROUSSELIN, *rôs-lăng'*), OF COMPIÉGNE: b. in Lower Brittany about the middle of the 11th c.; d. after 1121: called the 'founder of Nominalism;' but rather its first clear definer. He was strongly opposed by Anselm of Canterbury, and his views were condemned by councils 1092–94. See NOMINALISM.

ROSCIUS, *rŏsh'ĭ-ŭs*, QUINTUS: great comic actor of ancient Rome; b. at Solonium, village near Lanuvium; d. B.C. 62. Among his admiring and affectionate patrons was Cicero, who received lessons in elocution from the great comedian. When R. was sued at law by C. Fannius Chærea for 50,000 sesterces, Cicero defended him before the judex Piso (probably B.C. 68) in his extant oration, *Pro Q. Roscio Comœdo*. R. attained such perfection in his peculiar art, that to be a 'Roscius' became synonymous with pre-eminence; and he left an immense fortune, realized on the stage.

ROSCOE, *rŏs'kō*, WILLIAM: eminent historian of Lorenzo de' Medici and Leo X.: 1753, Mar. 8—1831, June 30; b. near Liverpool, England. His father was a market-gardener, whose assis' at he became in his 12th year, after receiving the rudiments of learning at a common school. In 1769 he was articled to an attorney at Liverpool; and 1774 was admitted an attorney of the court of king's bench, and began practice. Meanwhile he had studied assiduously the classics, and the Italian language and literature. In 1773 he appeared in print as author of a poem; and 1777 a collection of some of his earlier pieces was published, containing his first protest against the slave-trade. In 1796 was published vol. I. of his *Life of Lorenzo de' Medici, called the Magnificent*, begun many years before. Its success was extraordinary, and it at once established his literary reputation. It went through several editions, and was translated into German, French, and Italian. In 1805 appeared his second great work, *Life and Pontificate of Leo X.*, for which, with assistance of others, he had been collecting materials for many years. This work, which also appeared successively in German, French, and Italian, maintained R.'s repute, though, as dealing with a controverted subject, its tone and spirit were severely criticised by some, and it was placed on the papal *Index Expurgatorius*.

R. about 1800, turning from the legal profession, became partner in a Liverpool bank, a step which involved him eventually in great pecuniary embarrassment. In 1806 he was returned to parliament for Liverpool in the whig interest; and had the gratification of taking part in the abolition of the slave-trade; but he did not find parliamentary life congenial, and declined a candidacy the next year. He was, throughout, a consistent opponent of the war with France, against which he published several pamphlets, and

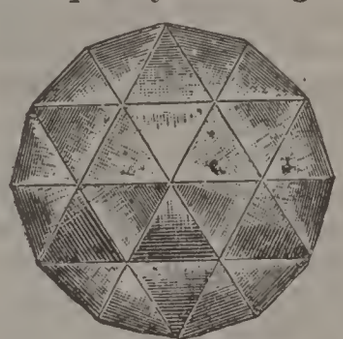
was on all points the advocate of liberal opinions. He was a zealous promoter of literature, and patron of the fine arts. He died at Liverpool.—R. was of fine moral fibre, lofty in principle, punctilious in business honesty, courageous for the unpopular right. His works, though not retaining their former pre-eminence, keep a place among valuable historical contributions.

ROSCOMMON, *rŏs-kŏm'on:* inland county of Ireland, in the e. of the province of Connaught; bounded e. by the river Shannon: it is 60 m. long from n. to s., 40 m. broad from e. to w.; 607,691 acres, of which 440,522 are arable. The surface of R., which belongs to the central plains of Ireland, is level, with undulations rising in the s. into the Slieve Bawn range, whose highest point is 867 ft.; and in the n. into the Curlew Mountains, of which Slieve Curkagh attains a height of 1,098 ft. Its principal rivers are the Shannon (q.v.) and the Suck. R. communicates by means of the Midland Great Western, the Southern and Western, and Northwestern railways, with all parts of the kingdom. In geological structure, it belongs to the central limestone formation, in some districts of which the sandstone protrudes. The soil in the central district is in general light, but fertile, and affords the finest sheep-pasture in Ireland—the 'Plain of Boyle.' Some portions contain a rich and fertile loam; but the chief farming industry is the feeding of sheep and cattle.—The county has little manufacture. The chief towns are Roscommon (q.v.), Boyle, Castlerea, Elphin, and Strokestown. R., in the ante-English period, was the country of the septs of MacDermott, O'Daly, O'Kelly, and, above all, O'Conor, of which there were two branches, that of the O'Conor Roe (red), and that of the O'Conor Don or Dhun (brown). The present representative of the O'Conors, the O'Conor Don, is one of the very few Irish princes who have succeeded to the hereditary estates of their ancestors. R. possesses a vast number of antiquities of the Celtic period, raths, etc.; portion of a round tower at Oran, several remains of strong castles of the English period, and some fine ecclesiastical ruins, of which Boyle, Roscommon, Tulsk, and Clonshanville are the principal.—Pop. about 102,000.

ROSCOM'MON: capital and assize town of the county of R., Ireland; 96 m. w.-by-n. from Dublin. It dates from the 13th c., when it arose around a Dominican abbey, founded by the O'Conor 1257, and a castle built soon afterward by Sir Robert de Ufford, the remains of both of which are still seen. R. is a market-town, in which corn is the principal commodity. It has scarcely any manufacture, and little commercial enterprise. Pop. 2,000.

ROSCREA, *rŏs-krā′:* market-town of the county of Tipperary, Ireland; 94 m. s.w.-by-w. from Dublin, with which it is connected by a branch from the Great Southern and Western railway. It is a very ancient town, dating back to the early Christian period, when a monastery was built on this site in the beginning of the 7th c. The modern town is moderately well built; the Rom. Cath. church is a handsome structure; and there are considerable remains of the ancient greatness of the town—a castle, a lofty round tower, 80 ft. high, and ruins of two abbeys. The only manufacture is coarse woolen cloth, but there is a market for agricultural produce. There are schools with endowments of ancient date.—Pop. (1861) 3,543; (1881) 2,801, more than 400 being Prot. Episcopalians.

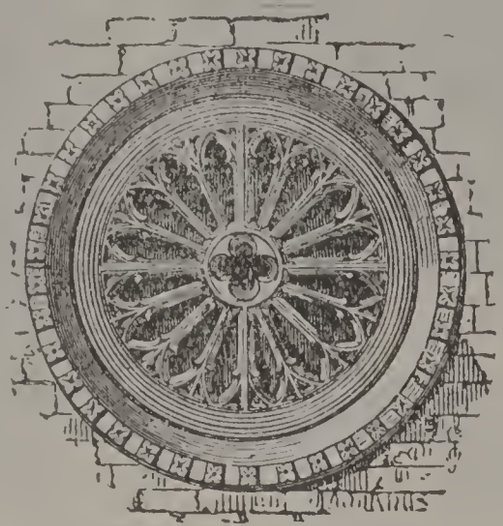
ROSE, n. *rōz* [F. *rose*—from L. *rosa;* Gr. *rhodon*, a rose: It. *rosa:* Ger. and Dan. *rose*]: well-known plant, or its universally admired flower, having many species and varieties (see below). ROSACEOUS, a. *rō-zā′shŭs*, belonging to the order of plants called ROSA′CEÆ, *-sē-ē;* like a rose; in *bot.*, applied to corollas having separate sessile petals like the rose (see ROSACEÆ). ROSACIC, a. *rō-zăs′ĭk*, applied to a substance (rosacic acid) of a brick-like, rose, or red color, deposited by the urine in gout and inflammatory fevers. ROSEAL, a. *rō′zĕ-ăl*, like a rose in smell or color. RO′SEATE, a. *-āt*, of a rose color; resembling a rose. RO′SY, a. *-zĭ*, blooming red; blushing; charming. RO′SINESS, n. *-zĭ-nĕs*, the quality of being rosy; resemblance to the color of the rose. ROSE-COLORED, or ROSE-HUED, a. having the color of a rose. ROSEBUD, a rose before it expands. ROSE-BUSH, the shrub or plant which bears roses. ROSE-DIAMOND, a diamond nearly hemispherical, cut into twenty-four triangular planes or facets (see BRILLIANT). ROSE-DROP, a confection or sweetmeat; a ruddy eruption upon the nose. ROSE-ENGINE, an appendage to the turning-lathe, by which a surface of wood or metal, as a watch-case, is engraved with a variety of curved lines, presenting some resemblance to a full-blown rose (see TURNING). ROSE-GALL, a curious excrescence on the dog-rose. ROSE-MALLOW, the hollyhock. ROSE-PINK, pigment of rose color: ADJ. having a pink color, like that of the rose. ROSE-TURNING, the use of the rose-engine, or the pattern produced thereby. ROSE-WATER, a perfume distilled from rose-leaves (see PERFUMERY). ROSE-WINDOW, in *arch.*, a circular window with its compartments branching from a centre, forming divisions which bear a general resemblance to the leaves of a rose. UNDER THE ROSE, a translation of the Latin '*sub rosa*,' which signifies, in a manner that forbids disclosure; in secrecy; privately: Latham connects this phrase with the practices of the secret sect of the *Rosicrucians* of the 17th c., who were popularly styled the Brothers of the *Rosy Cross* (see ROSICRUCIANS). *Note.*—The



Rose-diamond.

THE GARDEN ROSE.

rose is the emblem of England, the *thistle* of Scotland, and the *shamrock* of Ireland.



Rose-window, St. David's, Wales.

ROSE: pt. of RISE, which see.

ROSE (*Rosa*): genus of plants of nat. order *Rosaceæ*, consisting of shrubs, generally with prickly stems and pinnate leaves, the leaves terminating in a single leaflet; stipules at the base of the leaf-stalks; the calyx 5-cleft, its tube contracted at the summit, and finally becoming fleshy, and forming a chief part of the fruit; the corolla of five petals; the stamens numerous; the styles springing from the narrowed throat of the calyx, free, or aggregated into a column. The flowers are generally of the red tint well known as *rose color*, but sometimes white, more rarely yellow, and sometimes striped. The fruit (*Hip* or *Hep*) consists of the enlarged and colored tube of the calyx, within which are contained many *Achenia* (q.v.) amid prickly hairs. The species are very numerous, even after allowance for a great number of varieties elevated into species. There is no genus of plants in which the limits of species are more difficult to define, or in which varieties are more apt to be regarded as species. Roses are natives of all temperate parts of the n. hemisphere, and of its colder regions, even to Lapland and Hudson's Bay. Asia and Africa have supplied many fine sorts, but Australia, which produces many remarkably beautiful flowers, has no indigenous species. Roses have long been among the chief favorites in flower-gardens, for the beauty and fragrance of their flowers; and, more than any other flower, emblems of everything beautiful and delightful. Countless varieties —single and double—have been produced by hybridizing and cultivation. Among the ancients the R. was sacred to Eros or Cupid, and Aphrodite or Venus, and was considered the emblem of joy and love, and at the same time of prudence. When a R. was placed over the door of a room in which a Roman feast was held, whoever passed beneath it thereby incurred a solemn obligation not to reveal what was seen or heard; and from this custom the term *sub rosa*, as applied to anything told

in confidence, is derived. At a later period the R. was placed at the entrance to the confessional at Rome, as a symbol of secrecy. Poets have long used the opening buds of the R. as an image of purity and innocence. It is almost universally known as the Queen of Flowers.

Among the older roses is the Provence (*R. centifolia*), native of the e. Caucasus, called also the Cabbage R., and probably known to the ancients as the Hundred-leaved R., which is beautiful and fragrant. It was taken from Holland to England about 1567. The Moss R. (*R. centifolia muscosa*), an almost universal favorite, is probably a 'sport,' or accidental variation, from the Provence. It derives its name from the fact that the calyx has the appearance of being covered with moss. The French R. (*R. Gallica*) is an old and numerous family, with large flowers and with many variegated sorts, and is popular in gardens. It is grown largely in France for manufacture of otto of roses. The Damask R. (*R. Damascena*) of Syria is cultivated in Damascus for manufacturing purposes, and in gardens in the western world. Most of the perpetual roses originated from this stock. The White R (*R. alba*) is from central Europe. The Sweet-brier R. (*R. rubiginosa*) is indigenous to Gt. Britain. The Austrian Brier R. (*R. lutea*) is from n. Italy and is the source of the best hardy yellow roses. The Alpine R. is the source of the Boursault R. (*R. Alpina*), originated by and named for M. Boursault of Paris. The Banksian R. (*R. Banksiana*), from China, named for Lady Banks, is a prolific and beautiful climber, but not hardy in cold climates. Of the hybrid roses, the Hybrid China (*R. Indica hybrida*) class contains many popular sorts. It is said that the first crossing which produced these sorts was accidental, but the result led to careful efforts by which many splendid varieties have been formed. The Hybrid Bourbon R. (*R. Borboniana hybrida*) has many fine varieties, which bloom well in autumn. The original of this type (*R. Borboniana*) is supposed to have come from an accidental seedling of a plant in a hedge on the Isle of Bourbon. The Hybrid Perpetual class has many splendid roses which are fragrant, hardy, and vigorous. They yield many flowers in June, and some later in the season, but are not as continuous bloomers as the Tea and China sorts. The Musk R. (*R. moschata*), from Persia and n. Africa, has a musk-like odor, flowers in autumn, but is too tender for common cultivation. The China R. (*R. Indica*) was taken to Europe 1789, and the Tea-scented China R. (*R. Indica odorata*), also from China, in 1810. One of the most peculiar of the Tea roses is the American Banner, with a striped crimson and white flower, which appeared as a 'sport' 1877 and has perpetuated its markings. As a class, the Tea roses are quite tender; and at the north, except for professional cultivators, it is better to put out young plants each spring than to attempt to keep the old ones through the winter. The Noisette class of roses (*R. Noisettiana*) was originated 1817, in S. C., by Mr. Noisette, who crossed the China and the Musk roses. It contains a large number of fine varieties, but many of them do not thrive far north.

A CALIFORNIA ROSE GARDEN.

The Polyantha Remontant R. (*R. Polyantha*), from Japan, is of dwarf habit, blooms in clusters, and is specially useful for bedding purposes. The Japanese species (*R. rugosa*), brought to the United States by Com. Perry, produces large crimson flowers, remains long in bloom, and is a remarkably handsome bush.—Many native N. Amer. species have been described, but not all well established. The Swamp R. (*R. Carolina*) has hooked prickles, and grows 4–8 ft. high; the Dwarf Wild R. (*R. lucida*), 1–2 ft., has the depressed hip nearly smooth; the Early Wild R. (*R. blanda*) of rocky banks, 1–3 ft., has a globular hip; the Prairie or Wild Climbing R. (*R. setigera*) of the west and south is exceedingly beautiful (though not fragrant) in all its cultivated varieties, such as the Queen of the Prairie, etc. It is a great bloomer, and very hardy. The Cherokee R. (*R. Sinica*) is from China, and often runs wild at the south, as do there and elsewhere the Dog-rose and Sweet-briers, naturalized from Europe.

Propagation is easily effected by cuttings and layers. Roses are usually grown on their own roots, but weak varieties are sometimes worked on the more vigorous Manetti. The latter plants should be set so that the junction of bud and stock will be about 3 in. below the surface of the ground. Plants can be kept in pots, but give better results when set in open ground. The soil should be pulverized to a depth of 12 inches, and be well manured. The earth must be tightly packed around the roots when plants are set; and if the weather is hot, the stems should be shaded for a few days. The ground should be kept free from grass and weeds; and, to increase the number of blossoms, the flowers should be removed as soon as they are fairly open. Pruning is to be varied with the character of the variety, but dead shoots should be removed from all plants before growth begins in spring. Climbing roses bloom on wood grown the previous season and need pruning only to keep the plant within bounds. Ever-blooming, hybrid perpetual, and moss roses bloom on new wood, and early in spring need cutting back about half of the growth made the previous season. Spring is the best season for planting at the north; but in warm climates, either autumn or winter is more desirable. Many varieties which are not quite hardy at the north can be kept through the winter by covering the ground with forest leaves; but care must be taken not to give this protection too soon in the fall or remove it too early in the spring.

By proper treatment under glass, the R. is readily forced to bloom in winter, and immense numbers of buds and blossoms are produced in this way for sale in large cities.

The genus *Lowea* has been separated from *Rosa* by Lindley, chiefly on account of the simple leaves. The only known species is native of central Asia.

The fruit of roses is used in medicine: see Hip. A mildly astringent and agreeable syrup, and other preparations, are made from the rapidly dried petals and buds of the French rose. A syrup is similarly made from the petals of the Hundred-leaved R.; and water distilled from them.

Rose-water, is in demand for its agreeable odor. *Rose Vinegar*, made by steeping rose petals in vinegar, is useful as external application in headaches, for dissipating unpleasant smells in apartments, etc. *Conserve of Roses* is made of the petals of roses pounded with sugar, and is useful as an astringent in diarrhœa of children. Oil or Otto (q.v.) of Roses is one of the most valuable perfumes.

ROSE, in Heraldry: a badge; drawn in a conventional form (see illus.), never with a stalk, except when expressly directed by the words of blazon. The rose gules was the badge of the Plantagenets of the House of Lancaster, and the rose argent of that of York. The York rose was sometimes surrounded with rays as of the sun, and termed *rose en soleil*.

Rose.

ROSE, n. *rōz*, or ROSE-RASH, n. *rōz-răsh* [*rose*, and *rash*, an eruption]: in *Scot.*, eruption on the skin, of small rose-colored patches, very slightly elevated; Erysipelas (q.v.), known also as St. Anthony's fire, *Ignis sacer*, etc.

ROSE ACA'CIA: see ROBINIA.

ROSE AP'PLE: see EUGENIA.

ROSE BEE'TLE (*Cetonia aurata*): coleopterous insect of section *Pentamera*, of tribe *Lamellicornes*, and not distantly allied to cockchafers and to the true beetles or *Scarabæi*. It is about an inch long, of shining green above, coppery red underneath.

ROSEBERY, *rōz'bĕr-ĭ*, ARCHIBALD PHILIP PRIMROSE, Earl of, LL.D., P.C.: born London, 1847, May 7; son of Archibald, Lord Dalmeny. On the death of his grandfather, to whose title he succeeded, he left Christ-Church, Oxford, without completing his college course; spent some time in foreign travel, and appeared in public life 1871, when he made a speech in the house of lords which won great favor. In 1874 he was pres. of the Social Science Congress at Glasgow, was married 1878 to a daughter of Baron Mayer de Rothschild, and 1880 was elected lord rector of the Univ. of Edinburgh; was under-sec. of state for the home office 1881–83; became first commissioner of works 1884, sec. for foreign affairs 1886, and a member of the London county council 1889. He is a liberal in politics, is one of the leaders of his party, and is interested in various philanthropic movements. He became Secretary of State for Foreign Affairs under Gladstone 1892, and succeeded Gladstone as premier 1894, holding that position until the Liberals went out of power 1895. In 1896, Oct. 6, he resigned the leadership of the Liberal party. His wife died 1890, Nov. 19.

ROSE-BUG (*Macrodactylus subspinosus*): small grayish-yellow beetle; named from the fact that it appears about the time that roses in open ground come into bloom. It is one of the most destructive beetles known, and preys upon leaves, blossoms, buds, and young fruit, and sometimes destroys whole crops of grapes, strawberries, peaches, apples, and other fruits, as well as vegetables and flowers.

These beetles come and go suddenly. The period of their activity ranges from four to six weeks. At its close the males perish; the females deposit their eggs in the earth and soon die. The eggs hatch in about 3 weeks, and the larvæ feed on roots till autumn, when they go deeper into the ground. They remain torpid during the winter, come nearer the surface as the weather grows milder, enter the chrysalis state in May, and become perfect beetles and emerge from the ground in June. The most efficient remedy seems to be to pick or brush them from the bushes or vines into vessels containing water, and afterward destroy them. This work must be done early in the morning. Spraying infected plants with preparations of kerosene, whale-oil soap, etc., sometimes proves effectual.

ROSECRANS, *ro'ze-krănss*, WILLIAM STARKE: soldier: 1819, Sep. 6—1898, Mar. 11; b. Kingston, O. He graduated from West Point 1842, was assistant prof. there 1843-47, made various river and harbor surveys, resigned from the army 1854, and became an architect and civil engineer in Cincinnati 1854. He became president of a coal company in W. Va. 1856, and the next year formed a company for manufacturing kerosene. On the opening of the civil war he joined the staff of Gen. McClellan as aide, was rapidly promoted, and reached the rank of brig. gen. U. S. army with commission dating 1861, May 16. He followed Gen. McClellan in command of the dept. of the Ohio, served in the Army of the Mississippi, succeeded Gen. Pope in its command, and afterward followed Gen. Buell in the dept. of the Cumberland; lost the battle of Chickamauga, largely, it is claimed, through the misinterpretation of an order, and was relieved 1863, Oct. 23; but the following Jan. was placed in command of the dept. of the Missouri, and turned back the Confederate invaders of that state under Gen. Price. His services at the battles of Iuka, Corinth, and Murfreesboro were of special importance, and he was brevetted maj.gen. U. S. army for gallantry at the battle of Stone river. He was mustered out of the volunteer service 1866, and 1867, Mar. 28, resigned from the regular army; he declined the nomination of gov. of Cal., and afterward that of gov. of O.; was U. S. minister to Mexico 1868-9; was interested in various railroad, mining, and manufacturing enterprises; was member of congress from Cal. 1881-85, and in the latter year, June, became register of the U. S. treasury, which office he held until 1893. He was appointed brig.gen. U. S. army 1889, Feb. 27, and was placed on the retired list the same day.

ROSELITE, n. *rō'zĕl-īt* [after G. *Rose*, the famous German naturalist]: a deep rose-red-colored variety of cobalt bloom.

ROSEMARY, n. *rōz'ma-rĭ*, or ROSEMARINE', *-mā-rēn'* [L. *rosmărīnus*, rosemary—from *ros*, dew; *mărīnus*, marine—from *mărĕ*, the sea: It. *rosmarino:* F. *romarin*], (*Rosmarinus*): genus of plants of nat. order *Labiatæ*, and nearly allied to Sage (*Salvia*), from which it differs in its filaments having an awl-shaped tooth, directed downward a little above the base. Only one species is known, *R. officinalis*, an evergreen erect shrub 4–8 ft. high, with linear leaves and pale-bluish flowers, growing in sunny places, on rocks, old walls, etc., in the countries around the Mediterranean Sea, and generally cultivated, as an ornamental and aromatic

Rosemary (*Rosmarinus officinalis*).

shrub, throughout the rest of Europe. The leaves have a short whitish-gray down beneath, a penetrating camphor-like odor, and a pungent, aromatic, and bitter taste. They contain a large quantity of an essential oil, *Oil of R.* used as a stimulating liniment to promote growth of the hair, and as a perfume. *Spirit of R.*, made by distillation of sprigs of R. with rectified spirit, is used to give pleasant odor to lotions and liniments. R. is to some extent in European practice used internally in chronic diarrhœa and a relaxed state of the system.—Oil of R. is a principal ingredient of the perfume *Hungary Water* or *Queen of Hungary's Water*.—The name Wild R. is given to *Ledum palustre*, a shrub with narcotic acrid properties.

ROSEN, *ro'zĕn,* Friedrich August: 1805, Sep. 2—1837, Sep. 12; b. Hanover. He entered Leipzig Univ. 1822, studied the biblico-oriental languages, and went to Berlin 1824, where he studied Sanskrit under Bopp, and published his first work, *Radices Sanscritæ* (Berlin 1827). Subsequently, he was called to London Univ. as prof. of oriental literature; resigning 1831. The revision of the Sanskrit Bengali Dictionary of Houghton (Lond. 1835) was his work; and he compiled for the Brit. Museum the catalogue of Syrian MSS. (Lond. 1839). His unfinished work on the Vedas was published by the Asiatic Society (of which he had been secretary) under the title *Rigveda-Sanhita, liber primus, Sanscrite et Latine* (Lond. 1838).

ROSENDALE, *rō'zĕn-dāl:* township in Ulster co., N. Y.; bounded e. by Wallkill, n.w. by Esopus creeks. The Wallkill Valley branch of the Erie railroad and the Delaware & Hudson canal pass through it; and within it is a group of small lakes called Binnewaters. Rosendale has excellent limestone quarries, and the villages of Rosendale and Binnewater manufacture large quantities of hydraulic cement, which finds a market in all parts of the country. Pop. (1910) 1,125.

ROSENKRANZ, Johann Karl Friedrich: b. 1805; d. 1879. He was professor of philosophy at Königsberg 1833-79, and was best known as the leading representative of the so-called 'center party' of Hegelians. He was a man of great breadth of culture and wide influence. He edited in conjunction with F. W. Schubert one of the only two complete editions of Kant's works. Among his works are *Psychologie* (3d ed. 1863); *Hegel's Leben* (1844); *Goethe und seine Werke* (1847); *Wissenschaft der logischen Idee* (1858-59); etc.

RO'SENMÜLLER, Ernst Friedrich Karl: distinguished biblical critic and orientalist: 1768, Dec. 10—1835, Sept. 17; b. Hessberg, near Hildburghausen; eldest son of Johann Georg Rosenmüller. He studied at Leipzig, became extraordinary professor of oriental literature 1795, ordinary professor 1813. He was a more accurate and solid scholar and a keener critic than his father. He shared the rationalism of his time, but never carried it to an extreme. His masterpiece, *Scholia in Vetus Testamentum* (11 vols. Leip. 1788-1835), is a most comprehensive and learned production, well worthy of consultation on any important point of biblical criticism. Other works of Rosenmüller's are: *Handbuch für die Literatur der biblischen Kritik und Exegese* (4 vols. Gött. 1797-1800); *Das alte und neue Morgenland, oder Erläuterungen der Heiligen Schrift* (6 vols. Leip. 1818-20); *Handbuch der biblischen Alterthumskunde* (4 vols. Leip. 1823-31); *Institutiones ad Fundamenta Linguæ Arabicæ* (Leip. 1818); and *Analecta Arabica* (2 vols. Leip. 1825-6).—His younger brother, Johann Christian Rosenmuller (1771-1820), acquired reputation as writer on anatomy, etc.

ROSENMÜLLER, *ro'zen-mül-lèr*, JOHANN GEORG: German divine and prof. of theology: 1736, Dec. 18—1815, Mar. 14; b. Ummerstädt in Hildburghausen. He was appointed prof. of theology at Erlangen 1773, primarius prof. of divinity at Giessen 1783, and was called 1785 to Leipzig, where he remained till his death. Among his many writings are: *Betrachtungen über die vornehmsten Wahrheiten der Religion auf alle Tage des Jahres* (4 vols. Leip. 1801); *Predigten über auserlesene Stellen der Heiligen Schrift* (3 vols. Leip. 1811–13); *Scholia in Novum Testamentum* (6 vols.; 6th ed. by his son, Ernst F. K. R., Leip. 1815–31); and *Historia Interpretationis Librorum Sacrorum in Ecclesia Christiana* (5 vols. Leip. 1795–1814).

ROSE-NOBLE (commonly called also *Penny of Gold*): English gold coin, struck first by King Edward III., 1334, and current at the value of 6*s.* 8*d.* sterling (about $1.65): half-nobles, *oboli*, or gold half-pence, and quarter-nobles, otherwise called *gold farthings* and *quadrantes*, were coined soon afterward. The name was given to the coin because it was of the same value as the 'noble,' a money of account, and was stamped on one side with the figure of a rose.

Rose-noble.

The R.-N. and its halves and quarters ceased to be coined after 9 Henry V.; but the 'noble,' the money of account, was used till a much more recent period.—The noble also existed in the Scotch coinage, and was equivalent to one-twelfth of the English coin.

ROSE OF JERICHO (*Anastatica hierochuntica*): plant of nat. order *Cruciferæ*, which grows in the sandy deserts of Arabia; and on rubbish, the roofs of houses, and other such situations, in Syria and other parts of the East. It is a small, bushy, herbaceous plant, seldom more than six inches high; with small white flowers; and after it has flowered, the leaves fall off, and the branches become incurved toward the centre, so that the plant assumes an almost globular form, and in this state it is often blown about by the wind in the desert. When it happens to be blown into water, the branches expand again, and the pods open and let out the seeds. Numerous superstitions are connected with this plant, which is called *Rosa Mariæ*, or *Rose of the Virgin*. If taken up before it is quite withered, the plant retains for years its hygrometric property of contracting in drought and expanding in moisture.

ROSEOLA, n. *rō-zē'ō-la* [L. *rosa*, a rose—so called from its color]: skin-disease, sometimes termed *Scarlet Rash.* In some cases it begins with slight febrile symptoms and gastric disturbance, which subside in two or three days, when the rash appears; in other cases, no preliminary fever occurs. The eruption appears first on the face, neck, and chest, in specks or small patches which have a tendency to coalesce; and in severe cases, the whole surface of the body assumes a uniformly red tint. The eruption is usually accompanied by itching of the affected parts, and by redness and slight soreness of the throat, and seldom lasts more than two or three days, when it gradually fades away; and its disappearance is not followed by the desquamation of epidermis, which is one of the natural sequels of scarlatina and certain other skin-diseases. The rash differs considerably in appearance in different cases.

Among causes of roseola are irritation excited by dentition, gastric and intestinal irritation, excessive acidity of the stomach, sudden checking of profuse perspiration, drinking of cold water when the body is overheated, etc. The diseases with which it may be confounded are erythema, measles, German measles, and scarlatina; and it is sometimes impossible to discriminate with certainty between roseola and very mild cases of scarlatina, when roseola is attended with sore throat. The treatment is very simple, as the disease would probably always terminate favorably if left to itself. If there is a suspicion that the case may turn out to be one of scarlatina, the patient should be isolated until the true nature of the affection becomes evident. In ordinary cases, a few days' confinement to the house, a spare and non-stimulating diet, saline laxatives, and an occasional warm bath, if there is much cutaneous irritation, constitute all the treatment that is expedient.

ROSE POLYTECHNIC INSTITUTE: an institution of collegiate grade at Terre Haute, Ind. Its organization was begun as early as 1874, but it was not opened to students until 1883. The institute offers four courses, each of four years' duration—mechanical engineering, electrical engineering, civil engineering and architecture, and chemistry. The degrees of bachelor of science, of master of science, of mechanical engineer, electrical engineer, and civil engineer are conferred.

ROSE QUARTZ: variety of quartz (q.v.), rarely crystallized in the form of rock-crystal (q.v.), generally found massive or imperfectly crystallized. It differs from common quartz and rock-crystal chiefly in its color, which is of a delicate rose-pink or flesh color, sometimes crimson or nearly so, and is due to the presence of manganese. Rose quartz is valued as an ornamental stone, the larger masses being made into vases, etc., the smaller pieces into jewels, seals, etc. A bright red kind is known as *Bohemian Ruby,* sometimes fraudulently sold as ruby.

ROSES, War of the: disastrous civil contest which desolated England 30 years (1455–85), sacrificing 80 princes of the blood and the larger proportion of the ancient nobility of the country. It was so called because the two factions into which the country was divided upheld the two several claims to the throne of the houses of York and Lancaster, whose badges were the white rose for York and the red rose for Lancaster. After the House of Lancaster had possessed the throne three generations (see Plantagenet), Richard, Duke of York, whose title to the throne was superior to that of Henry VI., advanced, at first somewhat covertly, his claim to the throne. In 1454 he was appointed Protector of the realm during Henry's illness, and on the king's recovery he declined to give up his power, and levied an army to maintain it. For account of the Wars of the Roses, see Edward IV.: Edward V.: Richard III.: Henry VI. The accession of Henry VII. may be said to have terminated the Wars of the Roses, though the reign of Henry was from time to time disturbed by pretensions of Yorkist impostors.

ROSET, n. *rō'zĕt* [F. *rosette,* red ink or red chalk—from F. *rose;* L. *rosa,* a rose]: a rose-colored pigment.

ROSETTA, *rō-zĕt'tâ:* city of Egypt, on the w. bank of the old Bolbitic branch of the Nile, about 4 m. above the mouth; 31° 25′ n. lat., and 30° 28′ 20″ e. long. The name is supposed to be an old Egyptian one, derived from *Rusat,* or the mouth of the plains.—Here was discovered the so-called Rosetta Stone, or trilingual inscription in the hieroglyphic, demotic or enchorial, and Greek language, by whose aid a key was obtained to the interpretation of the ancient hieroglyphs. It is of black basalt, about 3 ft. 7 inches in length, 2 ft. 6 inches in width, containing about one-third of the hieroglyphic, and nearly all the Greek and Roman portions, the upper part and portion of the side having been broken away. The contents of the inscription is a decree in honor of Ptolemy Epiphanes by the priests of Egypt assembled in a synod at Memphis, on account of his remission of arrears of taxes and dues owed by the sacerdotal body. It was set up B.C. 195, and is the only one of the numerous examples ordered to be placed which has been brought to light. This monument was discovered 1799 by Boussard, French officer of engineers, during the French occupation of Egypt, in an excavation made at Fort St. Julien, near Rosetta. More recent excavations have shown that it was found on the site of a temple dedicated by the Necho II. of the 26th dynasty to the solar god Atum or Tum.—By the Arabs, the city of R. is called Rashid. It rose into importance when the accumulation of mud had silted up the Damietta branch and destroyed

Rosetta Stone.

the importance of that city. It has been much praised for its verdure and charming gardens, which present an agreeable contrast to the barren wastes around. The streets are narrow, running n. and s. The river has a sand-bar at the mouth, preventing entrance of large ships-of-war. Pop. 16,600—of mixed races.

ROSET'TA STONE: see ROSETTA.

ROSET'TA WOOD: furniture-wood of lively orange-red color, with very dark veins; imported from the E. Indies in logs about 12 inches in diameter; but it is not known what tree produces it. It is little used, because, though extremely beautiful when first cut, the colors become dark by exposure.

ROSETTE, n. *rō-zĕt'* [F. *rosette*, a dim. of F. *rose*, a rose—from L. *rosa*, a rose: It. *rosetta*, a rosette]: ribbon arranged in a cluster somewhat like a rose, and used as an ornament or badge; in *arch.*, a rose-like ornament used in decorations; in *bot.*, a cluster of leaves disposed in close circles.

ROSETUM, n. *rō-zē'tŭm* [L. *rosētum*, a rose-garden or bed of roses—from *rosa*, a rose]: a garden or parterre devoted to the cultivation of roses.

ROSE'WOOD: name given to the wood of various kinds of trees, valued for beauty, and used for ornamental furniture.—The R. of commerce has been thought to be the product of a species of *Mimosa*, native of Brazil. It was formerly said that R. is the timber of several species of *Triptolomea* (nat. order *Leguminosæ*, sub-order *Papilionaceæ*); but that genus has now been constituted a section of *Dalbergia;* and the trees yielding R. are, in general, still doubtful in botanical classification. Different kinds of R., imported from S. America, are much used for veneering, in making furniture, musical instruments, etc. R. has long been second in popular favor only to mahogany as a furniture-wood. It has a dark blackish-brown color, beautifully streaked with dark red, and when being sawn or cut yields an agreeable smell of roses, from which it receives its name. It is brought chiefly from Para and Maranham, in logs usually about ten ft. in length; each log is only half the trunk, which is split in two, that the decayed part, always at the centre, may be rejected. Violet-wood and king-wood are from similar trees.—The name R. has been given also to kinds of timber grown in Jamaica, in Africa, and in Burmah. One valuable kind is yielded by an E. Indian tree, *Dalbergia latifolia*, called also *Blackwood*, found chiefly in Malabar, and growing to a height of about 50 ft.: it is of the nat. order *Leguminosæ*, sub-order *Papilionaceæ*. The timber is very valuable, and is much used in Bombay for ornamental furniture. Planks of four ft. in breadth are sometimes obtained, after the sap-wood has been removed. The increasing value of the wood has led to the formation of new plantations, under the govt. conservator of forests, in several parts of the Madras presidency.

ROSICRUCIANS, n. plu. *rō'zĭ-krō'shĭ-anz* [L. *ros*, dew; *crux* or *cru'cem*, a cross—the founder being Brother Christian *Rosenkreuz* (i.e., Rosy Cross)]: alleged secret society of philosophers and alchemists in the 17th c., as famous as it was mysterious. RO'SICRU'CIAN, a. *-shĭ-an*, pertaining to the Rosicrucians or their arts.—The name *Rosicrucians* is explained—not with entire satisfactoriness—by Mosheim and others, as from *ros*, dew, and *crux*, the cross. CRUX is supposed mystically to represent LUX, or light, because the figure + exhibits the three letters LVX; and light, in the opinion of the R., is that which produces gold. Now dew (*ros*) is the greatest solvent of gold, in the ancient alchemy. Near the beginning of the 17th c.—a period of mysticism in science and religion, when alchemy, astrology, and divination divided the public interest with Pietism in the Prot. world, and with the Convulsionist mania in the Rom. Cath. community—two anonymous books appeared, printed Cassel 1614, in German, entitled *Universal and General Reformation of the Whole Wide World;* together with *Fama Fraternitatis, or Brotherhood of the Illustrious Order of the R. C. (Rosy Cross); to the Rulers, States, and Learned of Europe; printed at Cassel, by William Wessel.* The first of these books is a kind of mystic allegory, presenting in the assumed deliberations of the seven wise men of Greece, and three Roman philosophers whom Apollo had called into conference, a satire on the philosophy and the political systems and governments of the age. The other book, *Fama Fraternitatis*, is the story of a certain holy and reverend Brother Christian Rosenkreuz (i.e., Rosy Cross), represented as living in the 14th c.; a German of noble birth, educated in a monastery, who conceives a design for reforming the world; and after learning at Jerusalem and Damascus all the science of the Arabians, spends three years at Fez, in Morocco, studying the magical science of the Moors, and returns to Germany, where he establishes, under the title Sancti Spiritus, with the aid of seven monks from the convent where he had been educated, a fraternity, the original brotherhood of the Rosy Cross. The story proceeds—that these adepts framed a system with secret symbols, and sent forth Father Rosenkreuz to propagate the brotherhood, which was to be kept secret for 100 years, the members, however, meeting once each year in the mother-house of Sancti Spiritus. Rosenkreuz, the book declared, died at the age of 106, and the place of his burial was held secret by the adepts; but he ordered that an inscription should be placed on one of the doors of Sancti Spiritus: 'Post cxx. annos patebo.' In the following year, 1615, a third tract appeared, also in German, entitled *Confessio, or Confession of the Society and Brotherhood R. C.*, which purports to be a defense of the brotherhood from the false rumors in circulation regarding it. The mixture of absurdity with seeming fanaticism in these books, and in some similar tracts subsequent, was long a literary puzzle; but it is now considered solved by the theory that they were merely a serio-comic satire on the philosophical follies of the time, written by Johann Valen-

tin Andreæ, of Herrenberg, as a mere exercise of humor, and without intention or expectation of their serious acceptance. The Rosicrucians were not heard of for the rest of the 17th c.; and neither their supposed connection with the Illuminati of Weishaupt at the close of the 18th c., nor their connection with the Templars, is accepted by scholars. A book entitled *Curious Things of the Outside World: Last Fire* (Lond. 1861), aims to give the impression that the Brethren of the Rosy Cross are not yet extinct. See Jennings's *Rosicrucians* (2d ed. 1879).

ROSIERE, n. *rō'zi-ĕr* [F. *rosier*, a rose-bush—from L. *rosārĭum*, a rose-garden]: in *OE.*, a rose-bush.

ROSIL, n. *rŏs'ĭl*, or ROSSEL, n. *rŏs'ĕl* [W. *rhos*, a moor a waste upland]: in *OE.*, applied to land in consistence between sand and clay. ROSS'ELLY, a. *-ĕl-lĭ*, friable.

ROSIN, n. *rŏz'ĭn* [another spelling of RESIN, which see]: residuum of turpentine after the oil is distilled off: see RESINS. When common Turpentine (q.v.), obtained from several species of Pine (q.v.) and Fir (q.v.), is distilled with water, it yields nearly one-fourth of its weight of essential oil, while the residue in the retort consists of *common rosin*, or colophony. There are two principal varieties of R., one of which is of brown, the other of white color. The brown variety is furnished by the Norway Spruce Fir, and is an amber-colored brittle solid, consisting of two isomeric acids, the *sylvic* and *pinic*, having the common formula $C_{20}H_{30}O_2$. Pinic acid, the more abundant of the two, is soluble in cold alcohol, from which it is obtained on evaporation as an amorphous mass: when heated to partial decomposition, it yields another isomeric acid, the *colophonic*. The white variety of R., known commercially as *Galipot*, is obtained from the turpentine yielded by *Pinus maritima* (see PINE), and consists almost entirely of an acid, isomeric with the preceding, and termed the *pimaric*. On evaporating its alcoholic solution, the acid is obtained in a semi-crystalline form; and on melting the mass thus obtained, and allowing it to cool, the resulting product is a colorless glass as clear as crystal.—Common R. dissolves freely in alkaline solutions, and enters largely into the formation of yellow soap. The alkaline resinates are in fact soaps, but are inferior in their cleansing properties to the stearates, oleates, and margarates. All the above-described acids of R. are monobasic, soluble in ether and hot alcohol, and insoluble in water. ROSIN, v. to rub or cover with rosin. ROS'INING, imp. ROS'INED, pp. *-ĭnd*. ROS'INY, a. *-ĭn-ĭ*, partaking of the qualities of rosin.

RÖSKILDE, *rös'kĭl-dĕh:* town, on the island of Seeland, which belongs to Denmark; about 20 m. s.w. from Copenhagen. It has a port at the head of the Isefiord, and has rail connection with Copenhagen. Previous to 1443 it was the cap. and many of the early kings of Denmark are buried within its limits. Here a treaty of peace was made 1658 after a war between Denmark and Sweden. R. has the most beautiful cathedral in the kingdom.—Pop. 5,221.

ROSMINI-SERBATI, *rŏs-mē'nē-sĕr-bâ'tē*, ANTONIO: metaphysician: 1797–1855; b. Roveredo, in the Italian Tyrol. From his early years he believed himself called to the priesthood, and on reaching the canonical age was ordained. Later he founded a religious order or congregation—the Institute of Charity; but the brethren (who might be either priests or laymen) were familiarly called Rosminians. R. is author of a complete system of human knowledge, which he has developed in more than 40 vols. He was a profound and original thinker—the peer of the greatest modern philosophers. The most distinctive ground-principles of his system are: 1. That the idea (or intuition) of being enters into all our cognitions, so that without it they were impossible. 2. That this idea is objective. 3. That it is essentially true, inasmuch as 'being' and 'truth' are the same. 4. That in the light of this essentially true idea the mind intellectually discerns, first, the animal body individually conjoined with it, and then, on occasion of the sensations produced in it *not by itself*, discerns the causes of those sensations, i.e., discerns a real, objective world without. 5. As being shines naturally to our mind, it must be what is called the 'light of reason:' it is the fundamental principle of all philosophy, the ultimate criterion of truth and certitude. Two of R.'s works have been translated into English: *New Essay on the Origin of Ideas* (London 1884), and *Philosophical System* (London 1882). The latter work is supplemented by a biography of R., catalogue of his writings, etc.; the translation, notes, etc., being the work of Thomas Davidson, a philosopher, for several years past resident in the United States.

ROSOLIC, a. *rō-sŏl'ĭk* [L. *rosa*, a rose; *oleum*, oil]: a term applied to an acid. ROSOLIC ACID, basis of a permanent blue (red in alkaline solutions) dye ($C_{20}H_{16}O_3$); formed by action of nitrous acid on rosaniline. Formerly R. acid was supposed to be produced by the action of oxalic acid on phenol in the presence of sulphuric acid; but the product of that reaction is not R. acid, but aurin, $C_{19}H_{14}O_3$. R. acid forms ruby-red crystals with greenish lustre; is easily soluble in hot alcohol, moderately soluble in glacial acetic acid and ether, insoluble in benzine and carbon disulphide; water dissolves it slightly, acids a little more freely.

ROSOLIO, n., or ROSOGLIO, n. *rō-zō'lĭ-ō* [It.]: a liqueur made from essence of vanilla, essence of amber, and oil of roses dissolved in alcohol, to which are added a clear syrup of sugar and water.

ROSS, n. *rŏs* [Gael. *ros*, an eruption on the skin, and on the bark of trees]: in *OE.*, the refuse of plants; in *prov. Eng.*, a disease on the bark of trees.

ROSS, *rŏs:* thriving market-town in Herefordshire, England, finely situated on the left bank of the Wye, 14 m. s.s.e. of Hereford. In the parish church (date 1316) is buried John Kyrle, celebrated by Pope as 'The Man of Ross' (q.v.). The town has trade in cider, malt, and wool. It is much visited by tourists. Pop. (1891) 3,575.

ROSS: Celtic word, meaning headland; occurring as the name or part of the name of many places in the British Islands and in other parts of Europe, as Roslin, Culross, Rossberg, Ross (in England), Montrose, Roxburgh, Ardrossan. There is another Welsh root, *rhos*, signifying a moor, which is found in Welsh and Cornish names, as Rossall, Rusholme. In Roseness, in Orkney, the equivalent Teutonic term *ness* has been superadded after the meaning of the Celtic *ross* had been lost.

ROSS, *rŏs*, Alexander Milton, M.D., F.R.S.L.: naturalist: b. Belleville, Ont., Canada, 1832, Dec. 13. By setting type in a newspaper office, in New York, he paid the expenses of a medical education, was identified with the anti-slavery cause, and in the civil war was in Canada as confidential correspondent of the U. S. govt. He is prof. in a medical college, a member of numerous scientific societies, and has been knighted by several foreign governments. His ornithological and entomological collections are very large and valuable. Among his works are: *Recollections of an Abolitionist* (1867); *Forest Trees of Canada* (1874); *Friendly Words to Boys and Young Men* (1884); *Natural Diet of Man* (1886); and *Medical Practice of the Future* (1887).

ROSS, Charley (in full, Charles Brewster R.): victim of a mysterious abduction: b. Germantown, Penn., 1870. While playing with an elder brother in front of his father's house, 1874, June, the boys were accosted several times by two men in a buggy who sought their confidence by gifts of candy. July 1, the men reappeared, invited the boys to ride with them, and on reaching Kingston sent the oldest boy to buy fire-crackers. When he returned to the spot where he had left the men and his brother, he found that all had gone. He told his story to a passer-by, who took him to his father. Since then, extraordinary efforts have been made to find Charley, but without the least success. His discovery was reported many times; the abductors demanded $20,000 for his return; the mayor of Philadelphia offered that sum as a reward for the capture of the boy and his abductors; friends and citizens aided the father with money to keep up the search; and the police, press, and public generally co-operated actively; but all without avail.

ROSS, Sir James Clark, D.C.L.: Arctic explorer: 1800, Apr. 15—1862, Apr. 3; b. London; nephew of Sir John R. He entered the navy in his 12th year, and served under his uncle in the Baltic, the White Sea, off the coast of Scotland, and in all the naval expeditions for discovery of the Northwest Passage (q.v.) 1818–33. While accompanying his uncle in his second Arctic voyage, he discovered, 1831, the north magnetic pole; and on his return he was rewarded with a post-captaincy. In 1839 he led an expedition to the Antarctic seas (see Polar Expeditions), and approached within 160 m. of the south magnetic pole. At his return 1843, he received knighthood; and 1847 he published *Voyage of Discovery in Southern Seas*, 1839–43. In

1848, Jan., he made a voyage in the *Enterprise* to Baffin's Bay, in search of Sir John Franklin, but without success. He received the 'founder's gold medal' from the Geog. Soc. of London 1841, and from Oxford the degree D.C.L.

ROSS, Sir JOHN, C.B.: Arctic voyager: 1777, June 24—1856, Aug. 31; b. Inch, Wigtown, Scotland; son of the Rev. Andrew R. He entered the navy at the early age of 10, was 15 years midshipman, 7 years lieut., 7 years commander, and became post-capt. 1818. When lieut. of the *Surinam*, he was wounded in cutting out a Spanish vessel from under the batteries of Bilbao 1806. His more important services were in the Arctic regions 1818, with Sir W. E. Parry: see NORTHEAST AND NORTHWEST PASSAGES. On a fresh expedition to the Arctic regions 1829, he discovered the peninsula 'Boothia Felix.' At his return, R. reeeived knighthood, and was made C.B. He received the freedom of London and other cities, gold medals from the Geog. Societies of London and Paris, and various other honors. In 1838 he was appointed British consul at Stockholm, where he remained some years. He was author of *Residence in Arctic Regions*, etc. (1829–34), 4to; Appendix to same, 4to; and other works. He became rear-admiral 1851.

ROSS, ROBERT: soldier: about 1770–1814, Sep. 12; b. England. He graduated from Trinity College, Dublin; entered the Brit. army, served in foreign lands, and 1814 came to this country with 3,500 soldiers. With this force, and 1,000 marines from the blockading vessels, he defeated the Americans at Bladensburg and burned the city of Washington 1814, Aug. 24. While on the way to Baltimore with his troops, he was killed.

ROSS, THE MAN OF: name given by Pope to John Kyrle English gentleman of great benevolence: b. Whitehouse, Glouecstershire, in the first half of the 17th c.; d. 1724. Kyrle received his appellation from having resided during the greater part of his life in the small town of Ross, Herefordshire. He there spent his time and fortune in building churches and hospitals, which procured for him the love and veneration of his contemporaries. Kyrle may be considered the Howard of his age. Pope in his *Moral Essays* celebrates his praises under the name of The Man of Ross:

> 'Behold the market-place with poor o'erspread!
> The Man of Ross divides the weekly bread:
> He feeds yon almshouse, neat, but void of state,
> Where age and want sit smiling at the gate:
> Him portioned maids, apprenticed orphans blessed,
> The young who labour, and the old who rest.'

We learn further, from the same poem, that the fortune of Kyrle was no more than £500 a year

ROSSA, *rŏs'sa*, JEREMIAH O'DONOVAN: Irish revolutionist: b. Ross-Carbery, co. Cork, 1831, Sep. With his widowed mother, two brothers, and a sister, R. was evicted from their farm 1847: all the family emigrated to America, except R. He was one of the originators of the Phœnix Soc., and as such was imprisoned 1856, Dec.—1859, Aug. He became manager of James Stephens's paper, *Irish People*, in Dublin 1863, and labored diligently in organizing revolutionary clubs in the three kingdoms. He visited the United States 1863 and 65. The *Irish People* office was raided by the police 1865, Sep., and R. was arrested on charge of treason-felony. A packed jury, instructed by a hostile bench, found R. 'guilty.' Asked 'what he had to say,' etc., R. said his one offense was that he was born an Irishman. Sentence: imprisonment for life. He was released 1871, Jan., on condition of quitting the United Kingdom and not returning for 20 years. He has since lived in the United States, ever contriving means of liberating Ireland. He has been a prisoner in 11 prisons—viz., Skibbereen, Bandon, Cork, Dublin, Richmond, Kilmainham, and Mountjoy, in Ireland; and Pentonville, Portland, Millbank, and Chatham, in England. He has written some poems of more than ordinary merit. He has written *Prison Life*. He is ed. of the *United Irishman*, newspaper, New York. —His wife, HANORA (EAGAR) O'DONOVAN R., has much talent as an elocutionist, and, for a year or two before R.'s release from prison, supported her children by giving public readings.

ROSSANENSIS, *rōs-sâ-nĕn'sĭs*, CODEX: manuscript of the gospels of Matthew and Mark, complete except the last 6 verses of Mark; named from Rossano, a city of s. Italy, in the cathedral of which the codex is preserved. For various reasons, its date is referred to the 6th c. It is in uncial letters of silver on fine purple vellum, the first three lines of both columns in gold, at the beginning of each chapter. Its sections are numbered on the plan of Eusebius of Cæsarea. Scenes in the gospel narrative in water-colors, and 40 figures of the prophets, embellish its 118 leaves. The text resembles that of another purple vellum, Codex N, of the same century, and agrees with MSS. of the 6th c. rather than with the Sinaitic and oldest Vatican, both of the 4th c., where differences exist. It was discovered 1879, and is the subject of a volume, with some fac-similes, by Dr. Gebhardt of Göttingen and Prof. Harnack of Giessen (1880).

ROSSANO, *rōs-sâ'nō:* city of s. Italy, province of Cosenza, at the foot of the Apennines, 2 m. from the Gulf of Taranto, on a high rocky hill, surrounded by precipices. It is walled and well built, is defended by a castle, and contains a beautiful cathedral, inlaid with carved marbles. Its fields are very fertile, producing grapes and lemons. R. was laid waste by Totila, King of the Goths. Pop. 15,000

ROSSBACH, *rŏs'bâch:* village in Prussian Saxony, govt. of Merseburg, 8 m. s.w. of the city of Merseburg. It is famous for the victory here gained by the Prussians under Frederick the Great over the combined French and Imperialist armies 1757, Nov. 5. A short time previously, Frederick had been compelled to leave the bulk of his army in Silesia under the Duke of Brunswick-Bevern, to check the Austrians on this side, and hastened with 22,000 men to oppose the invasion from the west. The Prince of Soubise (one of the 'amateur' French generals of the period), who was at the head of the confederate army of 60,000 men, thinking from Frederick's cautious manœuvres that he was terrified and desirous of retreating, at once charged forward with his cavalry, and left his columns at the mercy of Gen. Seidlitz, who attacked them in front and flank with the whole Prussian cavalry and artillery. The confederates were speedily thrown into utter disorder, and, being charged in front by the Prussian infantry under Prince Henry, their rout was complete. The 'rout of Rossbach' was so disgraceful that it long remained proverbial in the French army. The Prussians lost (according to a French account) only 300 men, while the loss of the allies was more than 1,200 slain; 6,000 prisoners, among whom were 11 generals and 300 officers.

ROSS AND CROMARTY, *rŏs and krŏm'er-tĭ:* two counties in Scotland, treated in the 'Census of Scotland —1881' as one county. As such, it is bounded n. by Sutherlandshire, e. by the German Ocean, s. by Inverness-shire, w. by the Atlantic. Ross comprises the districts of Easter and Wester Ross, Ardmeanach, or the Black Isle, and the Island of Lewis (See LEWIS-WITH-HARRIS). Many of the mountains are of considerable altitude, the highest ranging from 3,000 to 3,862 ft., the most remarkable being Ben Wyvis. The high grounds afford excellent pasture for sheep and cattle; and the glens and low grounds, in the more favored portions, have generally good soil, which, with the fine climate, especially in Easter Ross, produces grain of a superior quality. There are numerous fresh water lakes and rivers. The principal loch is Maree (q. v.) There are other considerable lakes, altogether occupying 90 sq. m. There are numerous water-courses; and the cataract of Glomach is one of the finest in the kingdom. Limestone and ironstone are abundant, as also granite and mica slate; and there are various mineral springs of note, the most famous being that of Strathpeffer. About the beginning of the 18th c. the country in many places was nearly devoid of trees; but numerous plantations were formed, and many parts now bear extensive forests. The lakes, rivers, and coast abound with fish; and in the numerous bays and sea-

lochs the fishery is extensive, occupying more than 17,000 persons.

The area of the two counties is 3,248 sq. m., or 2,078,896 statute acres. The valued rental 1674 was £7,000; the present valuation (exclusive of railways) averages £283,730. Total acreage under all kinds of crops, bare fallow, and grass averages 131,558; under grain crops, 48,470; under green crops, 27,540; clover, sanfoin, and grasses under rotation, 36,763; permanent pasture, exclusive of heath and mountain-land, 17,836 The number of horses used for agricultural purposes is about 8,000; cattle, 43,900; sheep, 326,000; pigs, 5,000.—The chief towns are Dingwall (q.v.), Fortrose (q.v.), and Tain (q.v.)—Pop. 76,450.

ROSSE, *rŏs*, William Parsons, third Earl of: practical astronomer, and constructor of telescopes: 1800, June 17—1867, Oct. 31; b. York. He was educated at Trinity College, Dublin; and afterward at Magdalen College, Oxford, where he graduated first-class in mathematics 1822. During the life of his father, he sat in the house of commons as Lord Oxmantown 1821-31; he succeeded to the peerage 1841, and was elected a representative peer for Ireland 1845. At an early age R. had studied practical science, especially the improvement of the telescope; and in 1826 had begun experiments in construction of fluid lenses (see *Philosophical Transactions*, 1840), but, relinquishing those investigations, he turned to the problem of the best mode of constructing the speculum of the reflecting telescope. The two great defects which had baffled opticians were 'spherical aberration' and absorption of light by specula; and in the casting of specula of large size, there was the apparent impossibility of preventing cracking and warping of the surface on cooling. By a long series of careful experiments, he discovered a mode by which the last defect was wholly obviated, and the two others greatly diminished. The metal for the speculum of his great telescope (see Telescope), three tons' weight, was poured into the iron mold 1842, Apr., the crucibles being lifted and emptied by means of cranes; and the mold was kept in an annealing oven 16 weeks, so that the metal should cool equably. It was then polished and mounted in his park at Parsonstown, at a cost of £30,000, the adjustments consisting of a system of chains, pulleys, and counterpoising weights, so complete in all its parts that the ponderous instrument of 12 tons' weight can be moved to point in any direction, with almost as much precision as the ordinary equatorial of the observatory. The first addition to the body of astronomical knowledge made by this telescope was the resolution of certain nebulæ, which had defied Herschel's instrument into groups of stars; next came the discovery of numerous binary and trinary

stars, and a description of the moon's surface. A statue to Lord R.'s memory was erected in Parsonstown 1876.

ROSSEL: see ROSIL.

ROSSELLINO, *rŏs-sĕl-lē'nō*, ANTONIO: Florentine sculptor; about 1427-79. He belonged to a family noted for artistic taste and skill. Little is known of his life, but some of his works have been preserved. They indicate a strong and fine religious nature and show remarkable skill in execution of beautiful designs. One of his principal works is the tomb of a Portuguese prince in a chapel of the church of San Miniato. Another tomb, of almost equal beauty, is in one of the churches of Naples; and some smaller works exist, which, like his more elaborate productions, show great delicacy.

ROSSELLIN'O, BERNARDO: sculptor and architect; 1409-64. As a sculptor, he was considered equal to his bro. Antonio R. (q.v.); and he became famous equally as architect. His best work in sculpture is in the tomb of Leonardo Bruni, Florentine historian, and in the fine reliefs on the pulpit in the cathedral at Prato. As an architect, he designed many fine buildings, and restored churches and other structures at Rome and elsewhere. He was noted also as a milit. engineer, in which capacity he built the walls and fortifications around several cities.

ROS'SER, THOMAS LAFAYETTE: American soldier and civil engineer, 1836, Oct. 15, b. Campbell County, Va. He entered West Point from the State of Texas in the class of 1861, but when President Lincoln ordered that class into the field after the attack upon Fort Sumter, Rosser resigned and entered the Confederate army, in which he was appointed 1st lieutenant of artillery and later captain. In 1862 he was made lieutenant-colonel and shortly afterward colonel of the 5th Virginia regiment under J. E. B. Stuart. In 1864 he became major-general in the army of Northern Virginia. He refused to surrender at Appomattox; escaped through the Federal lines, and while trying to reorganize scattered troops was captured and made a prisoner of war. After the war he studied law, but did not practice. In 1868 he became assistant-engineer in the construction of the Pittsburg and Connellsville Railroad; engaged on the Northern Pacific in 1870, becoming the next year chief engineer of its construction through Minnesota, Dakota and Montana; in 1881 became chief engineer of the Canadian Pacific railway. In 1886 he returned to Virginia to reside, and in the war with Spain in 1898 commanded a volunteer brigade.

ROSSETTI, Christina Georgina: English poet: 1830, Dec. 5—1894, Dec. 29; b. London; sister of Dante Gabriel and William Michael R. She began writing verse in early girlhood, and before her 17th year a small volume of her poetry was privately printed by her maternal grandfather in London, the contents of which foreshadowed the genius that was destined to rank her with her elder brother as a mystical, soulful, and felicitous writer. She lived a life of deep but not morbid seclusion, devoting herself to family affections—chiefly to the care of her invalid mother, who died 1886—and earnest religious thought and practice. Her principal publications are: *The Goblin Market, and Other Poems* (1862); *The Prince's Progress, and Other Poems* (1866); *Commonplace, and Other Stories*, prose (1870); *Sing-Song*, nursery rhymes (1872); *Speaking Likenesses*; (1874); *Annus Domini*, a prayer fitting a text for each day of the year (1874); *Seek and Find*, and *Called to be Saints* (1881); *Letter and Spirit* (1883); *Time Flies* (1886); and *The Face of the Deep* (1892). In 1896 a vol. of her verse, entitled *New Poems*, was posthumously edited and published by her brother William Michael.

ROSSETTI, Dante Gabriel (full baptismal name Gabriele Charles Dante): thoughtful and powerful painter, graceful poet, and elegant translator of early Italian poetry: 1828, May 12—1882, Apr. 9; b. London; eldest son of Gabriele R. He was educated at King's College, London. As a painter, he was more discussed by critics than popularly known; probably because his works were transferred into private collections as soon as they left his studio, without the publicity of exhibition. Although he never exhibited at the 'Royal Acad.,' his pictures were occasionally sent by their fortunate proprietors to various public picture-galleries. Of these, his *Fair Rosamond*, pervaded by earnest thought, and treated in a powerful, though strikingly unconventional, manner, was exhibited in the galleries of the Royal Scottish Acad. 1860–1. Of his other pictures, among the chief are *Dante's Dream*, *Ecce Ancilla Domini*, and *Beatrice Dead*. He contributed some fine drawings to an illustrated edition of Tennyson, which, though inadequately engraved, rank among the first of modern woodcuts. These, like everything that this artist produced, are strongly imbued with the spirit of the Romantic period (see Romantic School), but at its best, and according to its most pure ideal. R.'s name was brought prominently forward first by his association with Millais and Holman Hunt in the 'Pre Raphaelite Brotherhood' (see Pre-Raphaelitism). While time and experience modified the practice of some of the original Pre-Raphaelites, R.'s pictures displayed to the last the peculiarities of earlier days.—As author, R. is well known by his translations of the *Early Italian Poets from Ciullo d'Alcamo to Dante Alighieri* (1100–1200–1300); pub. 1861. With his brother William, he edited Gilchrist's *Life of William Blake, Pictor Ignotus* (Lond. 1863), left incomplete at the death of the compiler. *Poems* (1870), new ed., with additions (1881), added to R.'s reputation. His *Ballads*

and Sonnets (1881) heightened and extended this reputation and were received by the critics with almost unanimous applause. Favorite among his poems are *The Blessed Damozel, Sister Helen, Rose Mary.*

R. was not only painter and author, but a man of thorough acquaintance with and high accomplishment in applied and decorative art. He bore a distinguished part in the resuscitation of Gothic art in England, both ecclesiastical and domestic. Above and pervading his other attractions was a character loyal and true, with a most winning personality. See Caine's *Recollections of Rossetti* (1882).

ROSSETTI, *ros-sĕt'tē*, GABRIELE: Italian author: 1783–1854; b. Vasto, Italy. He came to England as a political refugee 1824. Two years afterward he published the *Comento Analitico* on the *Divina Commedia* of Dante, in which he aimed to show that in the middle ages all the poets used a jargon under which they veiled their hatred of the papacy, and concealed the true religion under the form of a woman beloved by them. In conducting this argument, he displayed amazing erudition. His eccentric views excited hostile criticism, and R. replied with three books: these writings, though not accepted as convincing, have at least founded a new school of interpretation of Dante; and in Italy his partizans are numerous. He was prof. of Italian lit. in King's College, London. In England R. married Frances Mary Lavinia Polidori, of a family known in literature—an Italian lady of partly English extraction. He died in London.

ROSSET'TI, WILLIAM MICHAEL: literary and art critic: b. London, 1829, Sep. 25; bro. of Dante Gabriel R. He was educated at King's Coll. School. He holds a place under the govt. He has translated Dante's *Inferno;* has edited the works of Shelley, with memoir; a series of *Lives of Famous Poets;* and many of the works published by the Early English Text Soc. and the Chaucer Soc. In 1850 he edited the organ of the Pre-Raphaelite school.—CHRISTINA GEORGINA R., a sister of Dante Gabriel R. (b. 1830, Dec. 5), is author of several poems and prose stories, among them *Goblin Market, and Other Poems* (1862); *The Prince's Progress, and Other Poems* (1866). Her later writings are mostly of a religious cast, as *Seek and Find; Called to Be Saints; Letter and Spirit.*—Another sister, MARIA FRANCESCA R. (1827–76), was author of an able study of Dante.

ROSSI, *rŏs'sē*, GIOVANNI BATTISTA DE: archeologist: b. Rome, 1822, Feb. 23—1894, Sep. 20: studied in the College of Rome, applied himself to the study of archeology and of the inscriptions of the first centuries of the Rom. Church, and won wide repute by his discoveries in the catacombs of Rome. He is pres. of the Pontifical Acad. of Archeology, a director of the German Archeological Institute in Rome, corr. member of the Berlin Acad. of Sciences, and member of the French Institute. He published collections of inscriptions and other archeological works 1857–61, 64–77, 76–85, 79, and 82

ROSSI, *ros'sē*, PELLEGRINO: 1787-1848, Nov. 15; b. Carrara, Italy; of noble family. He studied at Bologna, and at 25 years of age was appointed prof. of law in that univ. On the fall of King Murat, R. took refuge at Geneva, where he was appointed prof. of the science of law. There he published *Le Droit Pénal*, which made him famous in France; and 1833, Louis Philippe appointed him prof. of polit. economy at Paris. R. was sent to Rome as French ambassador 1845. Becoming again an Italian subject, he was called to the ministry by Pius IX.; and devised a confederation of Italian princes, with the pope as their pres. This roused the hatred of the Romans, and R. was stabbed to death by an unknown hand. After his death his unedited writings were published in Paris at the expense of the Italian government.

ROSSIENA, *rŏs-sē-ā'nâ:* town of European Russia, govt. of Kovno, on the Dubitza, a branch of the Niemen, 66 m. n.w. of Kovno. Under the Polish govt. it was cap. of Samogitia. Pop. 11,100.

ROSSINI, *ros-sē'nē*, GIOACHINO ANTONIO: greatest composer of the 19th c. for the Italian lyrical stage: 1792, Feb. 29—1868, Nov. 13; b. Pesaro, Italy; son of a horn-player in an orchestra of strolling players. At the age of 15 his talent was discovered by Countess Perticari, who sent him to study at Bologna. He was, however, principally self-taught, giving days and nights to the great Italian and German masters. His first important opera was *Tancredi*, performed first in Venice 1813, exciting extraordinary sensation throughout the musical world, and raising its composer at once to fame. It was followed by *L'Italiana in Algeri* (1813), *Il Turco in Italia* (1814), and *Aureliano in Palmira* (1814), all inferior to *Tancredi*. In 1815 R. was appointed musical-director of the theatre of San Carlo at Naples. *Il Barbiere di Seviglia*, most popular of all his works, was produced at Rome 1816, and was said to have been composed in 20 days; it was followed by *Otello* the same year; and 1817 appeared *La Cenerentola* at Rome, and *La Gazza ladra* at Naples. From this time to the close of R.'s engagement at Naples 1823, he wrote the operas *Mosè in Egitto*, *La Donna del Lago*, *Maometto Secondo* (otherwise known as *L'Assedio di Corinto*) and *Zelmira*. In 1823, he produced *Semiramide*, most gorgeous of his operas, at Venice, and soon afterward left Italy. He visited London, where he was received with great enthusiasm. At Paris, he received from Charles X. the appointment of director of the Italian Opera; and while there composed *Guillaume Tell* (1829), which, though ill-constructed as a drama, ranks musically as high as any of his works. When the revolution of 1830 broke out, R. lost the management of the Italian Opera. In 1836 he returned to Italy, where principally he resided till 1855. With *Guillaume Tell* he may be said to have closed his career, except that after it he composed his well-known *Stabat Mater*, a pretty and popular work, more secular than sacred. His statue was inaugurated at Pesaro 1864.

ROSSITER, *rŏs'sĭ-tẽr*, THOMAS PRITCHARD: scriptural and historical painter: 1817, Sept. 29—1871, May 17; b. New Haven, Conn. He was a pupil of Jocelyn, and opened a studio in New Haven 1838, but was a resident of New York after spending 6 years abroad, 1840-46, and again 3 years, 1853-56. After 1860 he lived at Cold Spring, N. Y., until his death. He became an academician 1849, and received gold medals in exhibitions at Paris 1855. His works were highly regarded, excelling especially in color. Besides numerous portraits, he painted such subjects as the *Return of the Dove to the Ark*, *The Wise and Foolish Virgins*, a series of scenes in the life of Christ, *Venice in the Fifteenth Century*, *The Home of Washington*, and *Washington's First Cabinet*.

ROSSO ANTICO, *rŏs'ō ăn-tē'kō:* technical name for the red porphyry of Egypt. It consists of a red felspathic base, in which are dispersed rose-colored crystals of oligoclase with some plates of hornblende, and grains of oxidized iron ore. The name is often given to a red variegated marble of Italy.

ROSTAND, *rōs-tän*, EDMOND: French poet and dramatist: b. Marseilles 1869, Apr. 1. He obtained his education at the Marseilles Lycée and the Collège Stanislas of Paris, and in 1891 was admitted to the practice of law. His first book, *Les Musardises* (1890), a collection of verse, attracted scant notice; nor was *Pour la Grèce* (1897), a poem which he recited for the benefit of wounded Greeks and Cretans in the Græco-Turkish war, much more successful. As a playwright, however, he at once met favor. His *Les Romanesques* (1894), and *Princesse Lointaine* (1895), both in verse, were applauded by public and press. But they were quite outdone by his *Cyrano de Bergerac* (1897), a five-act drama in verse, which proved to be one of the most conspicuous successes of the modern stage, being presented in Paris 500 times consecutively, with Coquelin in the title-role. It was given also in the United States in English by Richard Mansfield and in French by Coquelin. It employs the historic figure of de Bergerac, duelist and author. *L'Aiglon* (1900), based on the story of the King of Rome, was given in the United States by Sarah Bernhardt, who created the part in Paris, and, in English, by Maude Adams. Rostand was elected to the French Academy 1901, May 30, the youngest 'Immortal' ever admitted. His versification is finished and brilliant, his wit keen and polished; and added to these, his work displays a certain enthusiasm and spontaneity. He contributed, with Stephen Phillips, to the much talked of renaissance of the poetic drama. Among English translations are *Cyrano* by Thomas and Guillenard (1898) and Hall (1898); *L'Aiglon* by Parker (1900); *Les Romanesques* by Fleming and Hendee (*The Romancers*, 1899).

ROSTEL, n. *rŏs'tĕl*, or ROSTELLUM, n. *rŏs-tĕl'lŭm* [L. *rostellum*, a little beak—from *rostrum*, a beak, a bill]: in

bot., that part of the heart of a seed which descends and becomes the root; an extension of the upper edge of the stigma in some orchids; in *anat.*, a beak-shaped process. Ros'TELLATE, a. *-lāt*, having a small beak. ROSTELLIFORM, a. *rŏs-tĕl'lĭ-fawrm* [L. *forma*, shape]: beak-shaped; having the form of a rostel.

ROSTER, n. *rŏs'tėr* [etym. doubtful: perhaps a corruption of *register*, which see: more probably a contracted form of *rollster*—from *roll*, a list]: tabular form showing the order or rotation of officers, soldiers, or regiments for any service or duty; a list or muster-roll.

ROSTOCK, *rŏs'tŏk:* most important town and seaport of the grand duchy of Mecklenburg-Schwerin; in a flat, fruitful district on the Warnow, 9 m. from the mouth of that river in the Baltic, and 55 m. n.e. of Schwerin. Rostock consists of the city proper and of extensive suburbs outside the line of the old ramparts, now promenades. The university, founded 1419, has more than 40 professors and lecturers, 250 students, and a library of 135,000 vols. The handsome new university building is a Renaissance structure in brick. In St. Mary's Church, a large building dating from the 13th c., and possessing one of the finest organs in Germany, is the tomb of Grotius. St. Peter's, dating from the 12th c., has a tower 420 ft. high. Pop. 54,735.

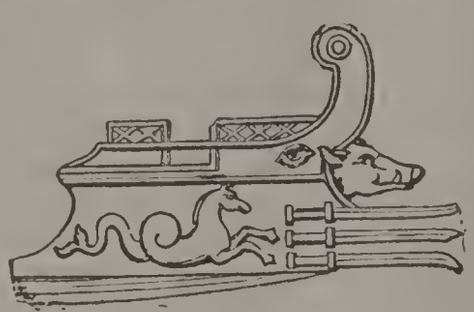
ROSTOFF, *rŏs-tŏf':* town of European Russia, one of the most ancient in the empire; in the government of Jaroslav, on the banks of Lake Nero or Rostofsky, 35 m. by rail s.w. of Jaroslav. An important fair is held here; and there is flourishing commerce. Its chief building, the great Kreml, has undergone a process of restoration since 1901. Pop. 14,350.

ROSTOFF' ON THE DON: district town and ferry of s. Russia, government of Ekaterinoslav, high on the right bank, and at the head of the delta, of the river Don. It owes its origin to the transfer of a fortress to this site 1761, and the definite Russian occupation of the Black Sea coast, since which time its progress, aided by its advantageous situation, has been so great that it is now the center of trade in s. Russia. Pop. 120,000.

ROSTOPCHINE, *ros-top-chēn'*, FEODOR VASSILEVITCH, Count: Russian general: 1765, Mar. 23—1826, Jan. 30; directly descended from Genghiz Khan. He entered the Russian military service as a lieutenant in the imperial guard. Having the good fortune to be the first messenger to Paul of his accession to the throne, he was immediately (1796) created general; and successively grand-marshal of the court, minister of foreign affairs, count (1799), and chevalier of all the Russian orders. Rostopchine possessed extraordinary influence over the half-witted monarch, and succeeded in preventing his vagaries from seriously affecting the government or religion of the empire; but he was repeatedly banished from court and almost immediately recalled, and it was during the last

of these banishments (to Moscow) that the czar was murdered. Emperor Alexander seems to have disliked R., for he remained in banishment till 1812, May, when the emperor, having need of the services of all his subjects, appointed R. gov. of Moscow. On the approach of Napoleon's army, R., by extraordinary exertions, raised an army of 122,000 men fully equipped, but to his great chagrin was ordered to evacuate Moscow. R. has been unanimously branded by the French writers as the burner of Moscow, and for a long time this was generally credited, till, 1823, he published *La Vérité sur l'Incendie de Moscou* (Paris 1823), in which he rebuts the charge, affirming that this barbarous action was due in part to the fervid patriotism of a few of the inhabitants, and in part to the violence and negligence of the French. At the same time, he showed that the damage to Moscow was much less than the estimate by French and English writers. R. certainly set fire to his own mansion in the neighborhood, but no other act of incendiarism has been proved against him. Count R. resided in Paris 1817–25; then returned to Russia and died in Moscow. His daughter-in-law, Countess EUDOXIA R., is considered one of the first poets of Russia. R.'s works, which include historical memoirs, comedies, etc., in Russian and French, were collected and pub. at St. Petersburg 1853.

ROSTRAL, a. *rŏs'tral* [L. *rostrum*, the bill, snout, or muzzle of animals, a ship's beak—from *rodo*, I gnaw: It. *rostri;* F. *rostres*, a rostrum]: pertaining to a beak; resembling the beak of a ship. ROS'TRATE, a. *-trāt* [L. *rostrātus*, beaked, curved], or ROS'TRATED, a. having a process resembling the beak of a bird; in *bot.*, furnished with beaks; having a long sharp point. ROS'TRUM, n. *-trŭm* [L.]: the beak or bill of a bird, or anything resembling it; the prow of a ship; in *anc. Rome*, an erection for speakers in the



Prow of Ancient Galley Armed with the Rostrum.

Forum—so called from its being adorned with the beaks of an enemy's ships; a platform or pulpit from which a speaker may address an audience. ROSTRIFORM, a. *rŏs'-trĭ-fawrm* [L. *forma*, a shape]: beak-shaped.

ROSTRULUM, n. *rŏs'trû-lŭm* [L. *rostrum*, a beak]: *literally*, a little beak; in *entom.*, the name of the sucking apparatus or proboscis of the flea and like insects.

ROSTRUM: see under ROSTRAL.

ROSY: see under ROSE.

ROT, v. *rŏt* [Icel. *rotna;* Sw. *ruttna*, to decay, to fall off: Dut. *rot;* Icel. *rotinn*, rotten: AS. *rotian*, to putrefy]: to putrefy or decay; to be decomposed; to make putrid; to bring to corruption: N. putrid decay; fatal distemper peculiar to sheep (see below). ROT'TING, imp.: ADJ. decomposing wholly or partially. ROT'TED, pt.: ADJ. decomposed wholly or partially; affected with rot. ROTTEN, pp. *rŏt'n:* ADJ. putrid; corrupt; decomposed by the natural process of decay; having some defect in principle; treacherous. ROT'TENLY, ad. *-lĭ.* ROT'TENNESS, n. *-nĕs*, the state of being rotten; putrefaction; unsoundness. DRY-ROT: see under DRY.—SYN. of 'rot, v.': to putrefy; corrupt; decay; spoil;—of 'rotten': putrefied; corrupt; putrid; decayed; unsound; defective; treacherous; deceitful.

ROT: malignant distemper most frequent among sheep, but also occasionally attacking rabbits, hares, deer, and cattle. It consists in the maturation within the liver and biliary ducts of an entozoon, the *Distoma hepaticum*, or Fluke (q.v.). In Great Britain, and some other countries, it causes enormous losses, but it seldom appears in the United States. The liver is first affected, but the disease soon extends to the lungs and kidney, and at a later stage assumes a dropsical form. Among the symptoms are thirst, blue color of the skin, diarrhœa, and general depression. The disease is most prevalent in autumn and early winter, is far more common in warm and wet seasons, and is principally confined to animals kept on low, undrained, or occasionally overflowed pastures; which drink from stagnant pools; or which are fed on hay grown on marshy soils. Preventive measures are thorough draining of the soil, supplying the animals with pure water, and giving them free access to salt. The indications of disease appear in 2 to 7 weeks after the work of the parasite is commenced. Turpentine is sometimes given with benefit in the early stages of the disorder, but, as a rule, remedial measures are of no avail. As the flesh is not apparently injured till degeneration of the liver commences, it is customary for farmers in whose flocks this disease appears to sell to the butcher immediately all the animals fit for food.

ROTA, n. *rō'ta* [L. *rota*, a wheel]: turn in succession; the roll or list to be selected from by turn or in succession.

ROTA, n. *rō'ta:* in the *Rom. Chh.*, a tribunal within the Curia, formerly the supreme court of justice and the universal court of appeal. These functions are now otherwise assigned.

ROTA, *rō'tâ:* town of Spain, province of Cadiz, six m. n.n.w. from Cadiz, on the opposite side of the entrance of Cadiz Bay. Rota wine has some celebrity, and is sent to the British market.—Pop. 8,000.

ROTACISM, n. *rō'ta-sĭzm* [Gr. *rōtakismos*]: an exaggerated pronunciation of the letter *r*, produced by trilling the extremity of the soft palate against back part of tongue.

ROTANG, n. *rō-tăng':* see RATAN.

ROTARY: see under ROTATE.

ROTATE, v. *rō-tāt'* [L. *rotātus*, whirled round; *rotārĕ*, to whirl—from *rota*, a wheel: It. *rotare*, to rotate: Gael. *roth*, a wheel]: to move round a centre or axis, like a wheel: ADJ. in *bot.*, applied to a gamopetalous corolla, having a very short tube, and the limb spreading out more or less at right angles; wheel-shaped. ROTA'TING, imp. ROTA'TED, pp. ROTA'TION, n. *-tā'shŭn*, the act of turning a wheel or other body on its axis; the state of being whirled round (see below): vicissitude; established succession; in *anat.*, the revolving motion of a bone round its axis; in *bot.*, the internal circulation of the fluids in the cells of plants. ROTATE-PLANE, or ROTATO-PLANE, a. in *bot.*, wheel-shaped and flat, without a tube. ROTATOR, n. *rō-tā'tĕr*, that which gives a circular or rolling motion—applied to certain muscles of the body. ROTATORY, a. *rō'ta-tĕr-ĭ*, going in a circle; moving in succession. RO'TATO'RIA, n. plu. *-tō'rĭ-a*, or RO'TATORIES, n. plu. *-ĭz*, the wheel-animalcules or rotifers, so called from their circles of cilia, which under the microscope appear like revolving wheels (see below). ROTARY, a. *rō'tĕr-ĭ*, turning on an axis, as a wheel; whirling. ROTARY ENGINE, a steam-engine in which is produced a continuous motion round an axis, by the direct action of steam.

Rotate Corolla.

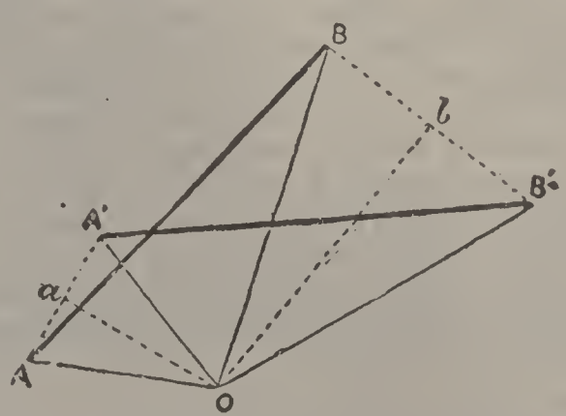
ROTA'TION (L. *rota*): state of being turned around. There is, perhaps, no elementary idea which has been the subject of so much popular misconception as that of R. This is due, probably, to the vagueness of the usual definitions.

All motion that we can observe is *relative*—e.g., any fixed object on the earth's surface has a certain motion *relative* to the earth's axis, in consequence of the diurnal R.; the earth itself has a certain motion *relative* to the sun, in consequence of its annual revolution; the sun has a certain motion *relative* to the so-called fixed stars; and it is possible that the whole stellar system may have a motion *relative* to something in space beyond its boundaries. Now, the motion of an object on the earth's surface differs according to the way it is measured: a passenger sitting in a railway-carriage is *at rest* if his motion *relative* to the carriage be considered; he has the same motion as the carriage if it be measured *relative* to the rails; and if the carriage were running from e. to w. along a parallel of latitude, so as to complete the circuit in 24 hours, he would be at rest relative to the earth's axis. If, therefore, we wish to talk of *absolute* motion, it must be measured *relative* to FIXED points or directions; and in the violation of this obvious condition lies the most common error. Thus, to show that the earth rotates about its axis, we may observe its motion relative to the line joining it with the moon; and we observe that the moon comes to the meridian at intervals of (roughly) 25 hours. Does the earth rotate in 25 hours? We know that it does not, and the error

consists in treating as an *absolute* R. a R. measured relative to a line—that joining the earth and moon—which is itself turning. If we take the intervals of the sun's crossing the meridian, we find 24 hours—a much closer approximation; but still not exact, because our line of reference—that joining the earth and sun—is slowly turning. Would we have an absolute measure, we must choose a *fixed* line, or one so nearly fixed that its motion is absolutely insensible. Such is the line joining any fixed star with the earth, and the time of the earth's *absolute* rotation on its axis is 23 h. 56 min. 4·09 s. —the interval between culminations of the same fixed star. The difference between absolute and relative R. in any planet gives rise to the difference between the *sidereal* and the *solar* day; and the planet's year contains just *one* more of the former than of the latter.

Now, suppose for a moment that the earth were to revolve only $\frac{1}{365}$ part as fast as it now does, there would be *one sidereal* day in the year, and there would be *no solar* day at all—in other words, there would be *no* R. of the earth with reference to the line joining it with the sun; that is, the earth would turn always the same side to the sun; yet it would be *absolutely* rotating about its axis once in a year. This is the case which we observe in the moon's motion relative to the earth, and we see at once that the moon must rotate *absolutely*—that is, with reference to fixed directions in space—in the exact time in which she completes one revolution about the earth. Those who say the moon does not rotate on her axis make precisely the same mistake as those who fancied that the earth is immovable, and that moon, sun, and stars revolve about it every day. There is a physical cause for this peculiarity in the moon's motion, which leads to very important consequences with reference to the future of the solar system: see TIDES.

Several elementary theorems regarding rotation may now be enunciated; but the proofs, though very simple, will be given merely in outline. Any displacement



whatever given to a plane figure in its own plane—as to a sheet of paper lying on a table—is equivalent to a single rotation about a definite axis. Let A, B be any two points of the figure, and let them be displaced to

A′, B′, respectively. Join AA′, BB′, and bisect them in *a* and *b* by perpendiculars meeting in O. Then it is easy to show that (1) OA′ = OA, OB′ = OB, and therefore O is the *same* point of the plane figure in its first and second positions; (2) AOA′ = BOB′, and is therefore the angle through which the whole has turned about the point O. If AA′ and BB′ are parallel, this construction fails; but in this case, if AB and A′B′ do *not* intersect, the motion is simply one of translation: if they *do* intersect, the point of intersection is the axis.

Any number of successive rotations about different points constitute, of course, a displacement, and are therefore reducible to one rotation.

Two equal and opposite rotations about different points give rise to a mere translation.

The first two of these propositions are true of figures on a sphere as well as on a plane surface; for the figure above has only to be drawn with great circles instead of straight lines, and the proof applies letter for letter; only, here, the first case of exception cannot occur, because two great circles *must* intersect. Hence it follows that, if the centre of a sphere be fixed, any displacement whatever is equivalent to a rotation about some axis; that is, after any motion whatever of a rigid body, one point of which is fixed, there is always *one* line of particles which remains undisturbed. (This simple proposition has been found very hard to believe, even by men of considerable intelligence.) Hence rotations about any number of axes passing through the same fixed point may be compounded into one; and, generally, any motion whatever of a rigid body may be decomposed into two, one of which is a motion of translation of some chosen point, and the other rotation about some axis through that point. Thus, in the case of the moon, we have a motion of translation of its centre in its orbit, and one of rotation about its axis; or we may combine them into a single rotation, in the period of a lunar month, about a fixed axis passing through the earth's centre.

Again, any displacement of a plane figure in its plane, or of a spherical figure on a sphere, may be produced by the rolling of a curve fixed in the figure upon another fixed on the plane or sphere. Hence the most general motion of a body, with reference to one point, consists in the rolling of a cone fixed in the body upon another fixed in space, their vertices being at the chosen point. To this, when the cones in question are right circular cones, belong the *Precession* (q.v.) and *Nutation* (q.v.) of the earth and of a top, the evolutions of an ill-thrown quoit.

ROTA'TION, MAGNETISM OF: term denoting one of a class of phenomena connected with rotation, illustrative of a law of magnetic induction. The magnetism of rotation was discovered by Arago 1824–5. He observed that when a magnetic needle was made to oscillate immediately above a copper plate, it came sooner to rest than it did otherwise. The oscillations were made in the same time as when away from the plate, but they were less in extent; the plate seemed thus to act as a damper to the motions of the needle. This being the action of the plate at rest on the needle in motion, Arago reasoned that the needle at rest would be influenced by the plate in motion. Experiment confirmed his opinion. He made a copper disk revolve with great rapidity under a needle, resting on a bladder placed immediately above it, and quite unconnected with it, the middle of the needle being placed above the centre of the disk. As expected, the needle deflected in the direction of the motion of the disk. The deflection of the needle increased with the rapidity of the motion; and when it reached a sufficient amount, the needle no longer remained in a fixed position, but turned round after the disk. This action of the revolving disk was attributed to what was then called the 'Magnetism of Rotation,' and the name has been since retained.

The explanation of this phenomenon was made first by Faraday (1832). He found it to arise from the reaction of currents, induced in the plate in motion by the magnet. The accompanying figure illustrates the electrical condition of the plate. PP is the plate, rotating in the direction indicated by the arrow; NS is the needle; and the lines with the arrow-heads indicate the general direction of the currents induced by rotation under the magnet in the plate. There are two complete circuits on each side of the disk, coinciding in the middle, and taking the direction CC. It is the conjoined current which affects the needle; it runs in a direction a little in advance of the needle, as the inductive power of the magnet takes some time to act. As the induced current lies below the needle, the deflection (according to Ampère's rule: see GALVANISM) takes place in the direction of the motion of the disk. When cuts are made in the disk in the line of the radii, it loses almost entirely its disturbing power; the currents formed in the whole disk can no longer take place, and those formed in the various sectors are weak in comparison: by filling up the vacant spaces with solder, the power is nearly restored to it. As is to be expected, the effect of the revolving

Fig. 1.

Fig. 2.

plate depends on the conducting power of the material of which it is made. It is owing to its high conducting power that copper is so much used in these experiments; hence also copper is much used in construction of magnetic apparatus. A copper compass-box, e.g., is not only desirable from its being free from iron, but it acts as a damper to bring the needle quickly to rest when disturbed.

The magnetism of rotation is only one of a large class of phenomena, in which the motion either of a magnet or of a conductor near it induces an electric current in the conductor. We here quote two experiments which may be regarded as the converse of the magnetism of rotation. In the first experiment, a small cube of copper (fig. 2) is hung by a thread to a frame, and placed between the poles of a powerful electro-magnet; the cube is sent into rapid rotation by the twist on the thread, previously given it; it is instantly brought to a halt when the current is allowed to circulate in the coils of the magnet, and it begins its motion again when the current is turned off. In the second experiment, a disk of copper, *c*, is made to rotate rapidly between the poles, *n*, *s*, of an electro-magnet, by means of a handle and intervening wheel-works, turned by the experimenter. When the current invests the soft iron poles with magnetism, the disk, moving freely before, appears suddenly to meet with an unseen resistance, and the rotation continues slowly or not at all. If persisted in, the rotation causes the disk to rise in temperature, the rise being proportionate, according to Foucault, to the square of the velocity of rotation. These and all similar phenomena illustrate a law that holds universally in magnetic induction, and was enunciated first by Lenz: *When a current is induced by the motion of a magnet or conductor, the inductive action tends to develop in the conductor a current, in such a direction that its action will be to oppose the motion producing it.* Thus, in the last experiment, the part of the disk approaching the poles has a current developed in it which repels them, and the part leaving the poles has a current induced in it which attracts them. The same mode of explanation applies to the other experiments referred to.

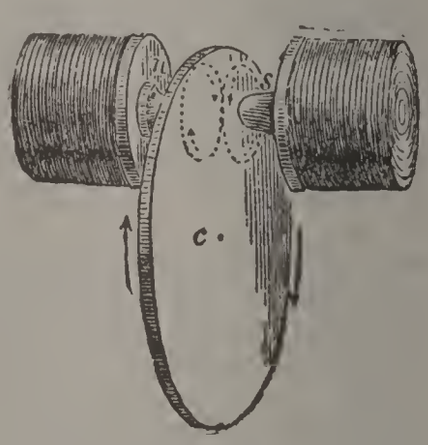


Fig. 3.

ROTATION OF CROPS.

ROTA'TION OF CROPS: in agriculture, cultivation of a succession of dissimilar crops. In a simple form it was practiced by the ancient Greeks and Romans, was long ago introduced into England, and has become one of the great principles of modern farming. It has largely superseded the fallow (see FALLOW). Its introduction to England is thought, by some, to have grown out of the conditions of life and the system of land-holding in the village communities, rather than from any clear appreciation of its importance in growing crops. The tillage land was divided into three portions, one of which was given to winter grain, one to summer grain, and one was allowed to lie fallow, a change being made each year so that the same land was not given to the same crop for two successive years. Each inhabitant of a village had a portion of the tilled land assigned to his special use, and it was necessary that some uniform system of cultivation be adopted.

Various reasons have been assigned to account for the necessity of a rotation of crops, but none of them are entirely satisfactory, and some, like the idea that the roots of plants excrete a substance poisonous to similar plants, but harmless to others, have been abandoned. A theory generally accepted is that, as different crops take the elements of fertility from the soil in differing proportions—some requiring large quantities of nitrogen and smaller quantities of phosphoric acid and potash, while others use much phosphoric acid and potash and but little nitrogen—a frequent change will insure larger crops and tend to prevent exhaustion of the land. But this does not fully account for all the phenomena which come under the observation of the cultivator. If there were no other reason than appears in this statement, the application of large quantities of manures, or of commercial fertilizers, specially adapted to the needs of the plants to be grown, should obviate the need of rotation of the crops. Certain crops, like onions and asparagus, are eminently successful under such conditions; but others, like clover, in time show a marked deterioration. This may be due to the generation in the soil of acids formed by large quantities of decomposing vegetable matter, to the peculiar mechanical condition of the soil which sometimes results from keeping the land long in a single crop, and to other causes, some of which are, as yet, unknown.

Aside from its relations to the subject of food supplies, the rotation of crops brings important benefits. It proves a great check to multiplication of insect enemies, which under a continuous system sometimes becomes so great as to prevent possibility of profitable cultivation. It also tends to prevent the spread of various fungoid diseases, e.g., the smut of Indian corn, which are greatly intensified by growing the same crop year after year on the same land. Still another benefit is in the facility which rotation affords for giving clean cult-

ure, and thus keeping down the weeds which otherwise might increase so as to choke the crops.

The frequency with which changes of crops should be made depends on the various conditions under which they are grown. On soils which disintegrate rapidly, changes are not required as often as on land of opposite nature. There are fields in Peru on which Indian corn has been grown for centuries; but in many localities two or three successive crops are as many as can be profitably grown. The nature of the crops, and the proportion of the product which is fed to animals on the farm and the waste returned to the land, also will exert a strongly modifying influence. Grass, if used on the farm, diminishes its fertility but little, but the growth and sale of grain tend to rapid impoverishment of the soil. The number and kind of animals kept, the quantity of concentrated food with which they are supplied, the quantity and quality of fertilizers used on the farm, and the degree of thoroughness in tillage, also must be taken into consideration.

Various forms of rotation have been adopted at different times and in different countries. Of late the almost inflexible rules of former times have been greatly modified; though in England a form of lease is often used which, by limiting the area to be given to certain crops, and restricting the sale of straw and hay, stands in the way of beneficial changes in the famous Norfolk four-course system, being popular in England, provided for the following crops, each to be grown one year: (1) clover or grass; (2) wheat or oats; (3) turnips, beets, potatoes, or else a bare fallow; (4) barley. In this country the method of rotation is varied in numerous ways. In the n., a crop of corn is often followed by potatoes, this by rye, after which the land is kept in grass several years. When the grass-crop perceptibly fails, the land is plowed, and the same course is gone over again. At the s., corn is often planted on a clover sod, is followed by wheat, this by cotton, and the land is then seeded to clover, which is cropped two or more years.

In the United States the rotations of crops vary considerably in different sections. In many places the succession of crops is dictated rather by accident or convenience than by any well considered principles. Corn and wheat or oats formed a common two-course rotation with the early settlers, until the land failed to produce a crop of wheat when corn was grown every second year, the land going to weeds in the interval. The 'Eastern Shore rotation,' which is a two-course, consists of corn followed by oats, with a secondary crop of Magothy Bay beans. The growth of this leguminous crop, while curtailing the yield of oats, furnishes considerable green manure for plowing in. The first system on the best cultivated farms in Virginia was a three-course, beginning with corn, and succeeded by wheat, in which the grass and weeds were allowed to grow and be grazed the

third year. One well known farmer in Virginia grew clover in place of the weeds the third year to furnish green manure. A later rotation was: (1) corn or oats; (2) wheat and clover sown; (3) clover grown and plowed under in August, and the land seeded to wheat for the fourth year.

An old and successful rotation recorded for New England is corn, oats, and timothy and clover, the latter remaining down for three years, thus two plowings are required in five years, one for corn, and a light plowing for oats, the grass and clover seed being sown among the oats. A modern three-course rotation for the eastern states is potatoes, winter rye, clover. This is a modification of a well-known middle western rotation, potatoes, winter wheat, clover. It embraces a root crop, a cereal and a leguminous crop. It is well suited to light and medium soils and is economical in labor, but one deep plowing being required in three years, that for the potatoes, the land being prepared for the rye by disking. The potatoes are a cash crop, the rye furnishes bedding and feed for stock, and the clover furnishes hay, and is not left down long enough to be seriously injured by the clover-root worm. The rotation is too short for many places, and probably the land would become clover-sick. It may be converted into a four-course by growing a crop of corn after the clover, and into a five-course by sowing grass with the clover and leaving them down for two years, thus corn, potatoes, rye, grass (timothy, redtop, etc., clover), mown, grass mown and grazed. In this way two-fifths of the tilled land is plowed each year, that for corn and potatoes; the land for potatoes may be plowed in fall after the rye is sown in September, thus reducing the spring work. If milch cows are kept, the corn furnishes grain and stover or may be cut for silage, the rye may be cut green for fodder or allowed to mature, and the area in potatoes might be reduced and cowpeas, soy beans, peas and barley, or some other fodder or silage crop substituted.

For a dairy farm having half the land in permanent pasture, a satisfactory four-course is (1) corn (cut for silage); (2) oats, the land being fall-plowed, the crop furnishing grain and bedding; (3) wheat (sown in fall, the grain being sold or consumed, the straw used for bedding); (4) clover (sown in spring in the wheat). This rotation permits of carrying the maximum amount of live stock and having a large supply of manure, thus enabling the crop-producing power of the soil to be maintained or increased. The live stock furnish constant employment and enable the farmer to make two profits, that of the grower and the manufacturer.

A common rotation in the middle west is corn, wheat and clover. The wheat is sown in the corn with a one-horse drill before the latter is mature, the clover being sown in the wheat. Labor is a serious problem and this system economizes it, but one plowing being required.

Consult Wheeler, *A Rotation of Crops*, Bull. 74, 75, 76, Agr. Exp. Sta., Rhode Island (1900); Gilbert, *Memoranda of the Rothamsted Experiments* (1901).

ROTATION OF PLANTS: the internal circulation of the fluids or protoplasm within the cell wall of certain plants and plant tissues, most readily seen in the rhizoids of Chara or in the young cells at the top of Nitella.

ROTATO'RIA, or ROTIF'ERA: popularly known as WHEEL-ANIMALCULES: animalcules named from the apparent rotation of certain disk-like ciliated organs which surround the mouth. Although some of the larger forms may be detected with the naked eye, they are, as a class, microscopical. They are widely diffused over the earth, inhabiting both salt and fresh water, in all climates. There has been much discussion as to their true place in nature. Ehrenberg and others regarded them as Infusoria; but there is no doubt that their organization is far more complex than that of the Infusoria; and the main question at the present day is whether they are most closely allied to the worms or to the crustaceans. Huxley maintains that they form a link connecting the Echinoderms with the Nematoid (or thread) worms, and that they constitute the lowest step of the Echinoderm division of the Annelida; while Leydig endeavored to show that, on various anatomical, physiological, and embryological grounds, they more nearly resemble crustaceans than worms, and proposed to call them *Ciliated Crustaccans*. Science is indebted to Leeuwenhoek for discovery of this remarkable class of animals. In *Philosophical Transactions*, 1702, he described one of the commonest of these animals, now known as *Rotifer vulgaris*, his attention having been directed especially to its power of retaining its vitality after more or less complete desiccation—a fact since confirmed by many other observers (see DORMANT VITALITY). The rotatoria have usually an elongated form, and are in most cases covered with a smooth, hard skin, thrown into folds by contractions of the subcutaneous tissue. The animal consists of a head and body. The body usually terminates in a prolongation, which, till recently, was termed the tail, but which is now known as the foot, and into which the intestines are never prolonged. The foot is composed of muscular and glandular structures, and often terminates in a pair of forceps, by which the animal can attach itself to leaves, etc. The body generally presents six segments, more or less distinct in different genera. The head presents the characteristic rotatory organs and the mouth, which always lies in the midst of them so as to receive particles drawn in by their whirlpool action. It is by these organs that they swim freely about, revolving on their axis, or, when at rest, producing vortex-like disturbances of the water. The form, number, and arrangement of these organs vary extremely in different genera, and

have been made a basis of classification by Ehrenberg and others. The rotatory organ may be single, double, or multiple. It often consists of a disk supported by a pedicle, on whose borders are successive rows of regularly arranged cilia, whose motion gives the appearance of rotation to the disk itself. In the genera *Floscularia* and *Stephanoceros*, these organs undergo peculiar modifications. In the former, there are five or six button-like processes about the mouth, covered with very long bristles, which move feebly, and scarcely give rise to vortices; while in the latter, the rotatory apparatus consists of five tentacle-like ciliated processes, and the animal thus closely resembles the Polyzoa (q.v.). The ciliated rotatory organs, unlike ordinary volatile cilia, are entirely under the animal's control. The digestive apparatus differs extremely in the two sexes, which are always distinct in these animals. In the female, the digestive apparatus is well developed, consisting of a mouth opening into a muscular pharynx, which has two horny masticating organs moving laterally upon each other. The pharyngeal masticating apparatus is of roundish form, and is composed of two jaws having one or several teeth brought together laterally by action of special muscles. For further information, see an exhaustive memoir by Gosse, 'On the Structure, Functions, and Homologies of the Manducatory Organs of the Class Rotifera,' *Philosophical Transactions*, 1856. Succeeding the pharynx is a narrow œsophagus, which leads into a dilated stomach, from which proceeds an intestine opening externally by an anus. In all the males discovered, there is entire absence of digestive organs, a rudimentary pharynx being the most that is ever observed. The nervous system in the R. consists of a cerebral ganglion, with filaments radiating from it. No heart or vessels have been discovered, but the respiratory organs are well developed. The sexual organs of the female are better known than those of the male. The ovary is round or oval, usually by the side of the stomach, and the oviduct, proceeding from it, usually opens into the cloaca. The ovaries develop only a few eggs at a time, and the nearly mature eggs may be readily observed in the body of the animal under a microscope. These animals produce two distinct kinds of eggs, similar in their primary formation, but differing in their ultimate destiny—namely, thin-shelled summer eggs and thick-shelled winter eggs. The young are liberated from the former immediately after their discharge, while they remain unhatched in the latter during the winter weather. As far as hitherto observed, the males, much fewer in number than the females, are developed only from summer eggs. Except in regard to their being totally devoid of stomach or in-

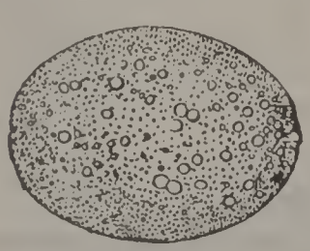


Fig. 1.—Male Egg, just laid.

testine, and in relation to the sexual organs (which in the male have been carefully examined by Gosse in his memoir 'On the Dicœcious Character of the Rotifera,' in the *Philosophical Transactions*, 1857), the organization of the males is similar to that of the females. The sexes are, however, so unlike that they would be taken for widely remote genera, if their actual hatching had not been observed; the males and the eggs from which they spring being much smaller than the females and the eggs from which they are produced. (In *Brachionus amphiceros*, the female eggs were $\frac{1}{170}$ of an inch in

Fig. 2.—Female Egg, nearly mature.

length, while the male eggs were only $\frac{1}{307}$.) The accompanying figures represent the male and female of *Brachionus dorcas* when newly born. The length of the latter an hour after birth was $\frac{1}{98}$ of an inch, while the diameters of the empty shell were only $\frac{1}{175}$ by $\frac{1}{220}$ of an inch—a marvellous increase in so short a period. 'Whether,' says Gosse, 'certain

Fig. 3.—Male *Brachionus dorcas*.

individuals produce only male, and others only female young, or whether separate impregnations are required for the production of the separate sexes, I do not know; but from all my observations I gather that the development of the one sex never takes place co-etaneously with that of the other; for male and female eggs are

never seen attached to the same parent, and the immature eggs in the ovary invariably develop themselves

Fig. 4.—Female *Brachionus dorcas.*

into the same sex as those which are already extruded. The duration of life in the males is always very brief; I have never been able to preserve one alive for twenty-four hours. Their one business is to impregnate the females, and for this momentary occupation no supply of loss by assimilation of food is wanted, and hence we can understand the lack of the nutritive organism.'

ROTCHE, *rŏch* (*Mergulus* or *Cephus*): genus of the Auk family (*Alcadæ*), separated from the true auks on account of the thick, short, and indistinctly grooved bill. The COMMON R. (*M.* or *C. melanoleucus*, or *M. alle*, formerly *Alca alle*), known also as the LITTLE AUK, SEA DOVE, DOVEKIE, and GREENLAND DOVE, is about the size of a large pigeon; its general color is black, but the belly is white, and there is a white mark on each wing. It is very abundant in arctic seas, and immense flocks are seen on the coasts of Greenland, Spitzbergen, Melville Island, etc. It is, however, truly oceanic in its habits, and scarcely visits the land except during the breeding season. See AUK.

ROTE, n. *rōt* [F. *route;* OF. *rote*, a track or road—from mid. L. *rupta*, a road—from L. *ruptus*, broken; *rumpĕrĕ*, to break]: the practice of impressing words on the memory by mere repetition, without an effort of the understanding: V. in *OE.*, to fix in the memory without informing the understanding. BY ROTE, without variation in the same track or road; by mere repetition, without the exercise of the understanding—but to *learn by heart* is to learn thoroughly.

ROTE, n. *rōt* [OF. *rote;* OHG. *hrota*, a rote: Gael. *cruit*, a harp, violin]: in *OE.*, a musical instrument, of two varieties, one being a psaltery or harp, the other a kind of fiddle.

ROTE, v. *rōt* [L. *rota*, a wheel]: in *OE.*, to go out by rotation.

ROTHE, *rō'tĕh*, RICHARD: one of the most profound speculative theologians of Germany: 1799, Jan. 28—1867, Aug. 20; b. Posen. He studied theology in the univs. of Heidelberg and Berlin, under Schleiermacher and Neander, and became successively member, professor, director, and ephorus of the Theological Seminary of Wittenberg. In 1837 he was nominated prof. of theology at the Univ. of Heidelberg, which in 1849 he exchanged for Bonn. In 1854 he returned to Heidelberg.—R. was in youth deeply religious and inclined to a mystical theology; later he was strongly influenced by Pietism; but still later his scope broadened; and in the last six years of his life he was publicly known as one of the theological liberals, though indeed his place might more correctly be stated as among the very moderately orthodox. He held that man, for his salvation from sin, required a supernatural revelation from God revivifying the human consciousness, and that the Saviour had to manifest himself 'in human history as a fresh miraculous creation, born of a woman, but not begotten by a man.' Vigorous grasp and keenly logical independence of thought, with an intensely religious spirit, were his chief characteristics; but he never formed a school, in the strict sense of the term. One of his well-known works is the *System of Theological Ethics, or Moral Theology*—a complete system of speculative theology or theosophy. This work is to show that religious truth is not a series of disputable propositions, but a Divine morality; the book is an attempt to translate the scholastic dialect of the creeds back into the living language of the Sermon on the Mount. Another remarkable book of his is the *Beginnings of the Christian Church*, which, by the peculiarity of 'standpoint' assumed by the author regarding church and state—tending to identify the two in his ideal, as he identified religion and morality—evoked many fierce counter-treatises, like Baur's *On the Origin of Episcopacy*. R. died at Heidelberg. Four different works by him, in 9 vols., have since been published. See Life by Nippold (Wittenberg 1873–4).

ROTHENBURG AN DER TAUBER, *rō'tĕn-bûrch ân dĕr tow'bĕr:* small ancient town of Bavaria, on the Tauber, 31 m. s.s.e. of Würzburg. There are manufactures of woolen cloth, paper, and gunpowder, and trade in corn and cattle. Pop. (1880) 6,504.

ROTHER, n. *rŏth'ĕr:* in *OE.*, an old spelling for RUDDER, which see; a sailor. ROTHER-NAIL, a large nail with full head for fastening rudder-irons.

ROTHER, a. *rŏth'er* [AS. *hrythcr*, an ox]: in *OE.* and *prov. Eng.*, wild; fighting and roaring, as cattle: N. black cattle in general. To RULE THE ROTHER, in *OE.*, to be master among the herd; to rule the fight. ROTHERSOIL, dung of rother beasts.

ROTHERHAM, *rŏth'er-am:* market-town in the W. Riding of Yorkshire, England; 6 m. e. n. e. of Sheffield, on the slope of a hill on the right bank of the Don. On the middle of the ancient stone bridge that crosses the Don is a Gothic chapel, formerly a prison. The Free Grammar School, founded 1584, restored 1858, and the court-house, are handsome buildings. In the neighborhood are coal and iron mines, which furnish materials for the manufactures, chief of which are stoves, grates, nails, engines and railway wagons. Pop. 54,350.—In the vicinity of R. are Roche Abbey, erected 1147; and Conisborough Castle, still in good preservation (see Scott's *Ivanhoe*).

ROTHERMEL, *rŏth'er-mĕl*, PETER FREDERICK: historical painter: b. Nescopack, Penn., 1817, July 18; d. 1895, Aug. 15. He adopted art at an early age, under the instruction of Otis, at Philadelphia, where he afterward lived, except during two intervals of residence abroad. In the Penn. Acad. he held prominent positions. His works are imaginative rather than realistic, though historical; and his ability in composition is acknowledged; among his best known are *De Soto Discovering the Mississippi, The Embarkation of Columbus, Columbus before Queen Isabella, Patrick Henry before the Virginia House of Burgesses*, and the *Battle of Gettysburg.*

ROTHESAY, *rŏth'sā:* royal burgh, seaport, and favorite watering-place of Scotland, cap. of the county of Bute, beautifully situated on the n. e. shore of the Island of Bute, at the head of a deep bay, 40 m. w. of Glasgow by the river Clyde. The bay offers safe anchorage in any wind, and is spacious enough to contain the largest fleet. The town has excellent schools and seminaries; while the beautiful bay, and the charming scenery of the island, attract summer residents. Its sheltered position, and the extreme mildness of the climate, have made R. a resort for invalids, especially those with pulmonary disease. Fishing employs some of the inhabitants, there is some ship-building, and at the pier nearly all the Clyde steamers to and from the w. Highlands regularly touch. There is a very handsome promenade, an excellent hydropathic establishment, and an aquarium. In the middle of the town are the ruins of Rothesay Castle, which receives historical mention first in 1263; it has remained in ruins since 1685. The Marquis of Butte has done much to render this ruin a picturesque object to visit.—Pop.9,300.

ROTHSCHILD, *rŏths'chīld*, Ger. *rōt'shĭlt*, LIONEL NATHAN DE, Baron: 1808, Nov. 22—1879, June 3; b. Frankfurt; eldest son of Baron Nathan Mayer de Rothschild. He was educated at Göttingen; was early initiated by his father into the business of the firm, and successfully extended its colossal operations. He was elected to parliament for London 1847, 49, 52, and 57; and at each election claimed to take the oath and his seat in the house of commons. The latter words of the oath—'on the true faith of a Christian'—he insisted on omitting, 'as not being binding on his conscience.' He was then requested to withdraw from the house; and patiently awaited the fate of the bill for Jewish emancipation, which usually passed the commons and was rejected by the upper house. In 1858 he was placed on a committee which was to hold a conference with the house of lords, and this was virtually the means of establishing Jewish emancipation. The commons sent up another bill; and a general belief prevailed that if it were, like the rest, thrown out by the lords, Jewish members would be admitted by resolution of their own house, instead of by act of parliament. The lords gave way, merely taking measures to prevent the admission of Jews into the upper chamber. Baron Rothschild thereupon (1858, July) took the oath and his seat. He sat till 1868, and again 1869-74.—In 1875 the firm of N. M. Rothschild & Sons supplied the £4,000,000 required for purchase of the Suez canal shares.—His brothers, Sir ANTHONY ROTHSCHILD (1810-76) and Baron MAYER AMSCHEL DE ROTHSCHILD (1819-74), were members of parliament.—His eldest son, Lord NATHANIEL MAYER DE ROTHSCHILD (b. 1840, Nov. 8), sat in the liberal interest for Aylesbury 1864-85, and was then raised to the peerage as Baron Rothschild. He was the head of the house until his death 1905, June 13, when his brother Ferdinand succeeded him.

ROTHS'CHILD, MAYER ANSELM DE, Baron of the Austrian empire: 1743-1812, Sept. 19; b. in the Jews' alley, Frankfurt-on-the-Main; son of Anselm Moses BAUER, small Jewish merchant. He was brought up to be a rabbi of the Hebrew faith; but became a money-lender at the sign of the 'Red Shield' (*Rothschild*—whence his change from his father's name) in Frankfurt. He soon gained reputation for integrity, which, with his taste for numismatics, gained him the friendship of William, Landgrave of Hesse-Cassel; and Rothschild being employed by the senate to raise a loan to save Frankfurt from pillage by the French republican army, obtained a loan from the landgrave. The landgrave (afterward elector) acquired immense sums by selling his subjects to fight in the armies of England and France. Napoleon, after the battle of Jena, pronounced the forfeiture of his estates, and a French army was on the march to his capital. The landgrave had accumulated in his palace vaults about $5,000,000 in silver; and sending for Rothschild to Cassel, he offered him the free use of the treasure, with

out interest, if he would convey it to a place of safety. With the aid of his Jewish friends, R. succeeded in secreting the money (it is said, burying it in a corner of his garden), and saving it from the hands of the French. At this time he had five sons, three of whom—Anselm, Nathan, and Solomon—being grown up, he associated with himself in business. ANSELM MAYER DE R. (1773–1855) remained with him at Frankfurt, and was chosen a member of the royal Prussian privy council of commerce, and 1820 Bavarian court-banker. NATHAN MAYER DE R. (see below) went to England 1800, where he acted as his father's agent. Previous to Mayer Anselm de R.'s death, he saw his five sons securely established as monarchs of European finance—Anselm Mayer in Frankfurt, Nathan Mayer in London, Solomon in Vienna, James in Paris, and Charles in Naples; all united in the wealthiest copartnership of the present, or probably of any, age. The chief of the firm, according to the founder's wish, was to reside at Frankfurt, where all important consultations are held. The sons were created barons by the Austrian govt. 1822. R. left also five daughters. The loans contracted by the firm during the great war with France were not more remarkable for magnitude than for success. They never took a bad loan in hand, and few good loans fell into other hands. In addition to their five principal establishments, they have agencies in many other cities of the old and new world. On two or three occasions the Rothschilds have successfully exerted themselves to preserve the peace of Europe. Their losses from the French revolution 1848, and from depreciation in funds and securities which followed the subsequent disturbances in various capitals of Europe, were estimated at $40,000,000—a wild estimate, but showing the popular belief in the immense resources of the firm.—As the members of each successive generation are received into the copartnership, and the cousins usually intermarry, and as their immense wealth is being continually augmented by a profitable business, the name and operations of the firm give promise of outlasting some royal dynasties.

ROTHS'CHILD, NATHAN MAYER DE, Baron: 1777, Sep. 16—1836, July 28; son of Mayer Anselm de R. (q.v.). Removing to England 1800, he acted as agent for his father, first at Manchester, in the purchase of Manchester goods for the continent. He then removed to London, where, by his father's agency, large sums were placed at his disposal, and invested by him with so much judgment that his capital multiplied with great rapidity. He was appointed, by the interest of the Landgrave of Hesse-Cassel, agent for the payment of the £12,000,000 sterling which, by the treaty of Töplitz, Great Britain stipulated to pay to her German allies. A large profit accrued to the house by this transaction. He is said to have been present at the battle of Waterloo, watching the struggle, and to have made known to his

firm in London the result of the battle several hours before it was known to the Eng. govt.; and the knowledge is reputed to have been worth a million dollars to the firm. R. after his father's death was considered the chief of the family, and has the repute of the most original financial genius of them all. He died at Frankfurt, whither he had been called by the marriage of his eldest son, Lionel, to his cousin Charlotte, daughter of Baron Charles. Anselm, Solomon, and Charles all died 1855, the first named dying childless at Frankfurt, and leaving a fortune valued at from 40,000,000 to 50,000,000 florins (16–20 million dollars). James died 1868.

ROTIFER, n. *rō'tĭ-fėr* [L. *rota*, a wheel; *ferrĕ*, to carry]: one of the ROTIFERA, *rō-tĭf'ėr-a*, a class of animals; called also wheel-animalcules (see ROTATORIA, under ROTATE: also ROTATORIA, or ROTIFERA). ROTIF'EROUS, a. *-ėr-ŭs*, having or bearing organs like wheels.

ROTTED, ROTTEN, ROTTEN-STONE: see under ROT.

ROT'TEE (island): see ROTTI.

ROTTEN-BOROUGHS, n. *rŏt'n-bŭr'ōz:* name given to certain boroughs in England, which, previous to the Reform Act of 1832, retained the privilege of returning members to parliament, though the constituency consisted of a mere handful of electors. In one case (Old Sarum), the borough did not contain a single inhabitant.

ROTTENBURG, *rŏt'n-bûrċh:* town in Würtemberg, seven m. s.w. from Tübingen; on the Neckar. The castle, built 1216, is now the house of correction. In the neighborhood are extensive hop-fields, orchards, and vineyards. The Roman station Sumelocennis stood on the site of R., and remains of roads and viaducts have been found. R. is seat of a bishop. Pop. 7,000.

ROTTEN ROW, n. *rŏt'n rō:* the fashionable ride in Hyde Park, London. *Note.*—An interesting parallel to *Rotten Row* is found in the Gael. *rathad-an-righ* [*rathad*, a road; *an*, of; *righ*, the king], the king's road or highway, and the Scot. corruption of the same phrase is 'Rattan-raw;' there are many 'Rotten Rows' and 'Rattan-raws' in Eng. and Scot.; a suggested origin of the London *Rotten Row* is the F. *route-du-roi*, the king's road: the suggested origin from the corruption of *routine-row*, as the *route* or course which the monks took in some of their processions, is not probable—see Dr. C. Mackay.

ROTTEN-STONE, *rŏt'n-stōn:* mineral consisting chiefly of alumina, with about ten per cent. of carbonaceous matter, and a little silica; soft, and easily scraped to powder: used for cleaning and polishing brass and other metals. It is supposed to be formed by decomposition of shale; and is found near Albany, N. Y., and in very numerous localities. It is brown; either grayish, reddish, or blackish.

ROTTERDAM, *rŏt'ėr-dăm*, Dut. *rŏt-ėr-dâm'* (*dam* or dike of the *Rotte*): after Amsterdam, the largest city in the Netherlands, and a place of great commercial activity; at the confluence of the Rotte with the Maas, in the province of S. Holland. It forms a triangle with apex to the n., and base stretching along the river, where ships from all parts of the world discharge their cargoes in front of the Boompjes, a splendid row of houses shaded with trees. The Hoog Straat, built on the dam or dike formed to repel inundations, divides the city into the Binnenstad and Buitenstad, the former n of that line, the latter extending s. to the Maas. Broad canals or havens, full of shipping, cut the Buitenstad into islands, and lofty houses face the quays on either side. The largest canals are the Leuvenhaven and Oudehaven, which trend inward from the Maas; and the Scheepmakershaven, Wijnhaven, Blaak, Haringvliet, and Nieuwhaven, parallel with the river. The waterway to the sea was deepened and altered, by works completed 1872, to avoid as far as possible the hindrances to navigation caused by the sand-banks at the mouth of the Maas. R. has railway communication with the other cities of the Netherlands, Germany, and Belgium. It is about 20 m. from the mouth of the Maas, the great commercial highway between the open sea and the Rhine provinces of Prussia.

The industries are varied, including sugar-refining, gin-distilling, making of liquors, beer-brewing, iron-founding, soap-boiling, manufacture of vinegar, cigars, patent oil, sail and hair cloths, articles of gold and silver, ship-building, etc. The works of the Netherlands Steamboat Co., at Feijnoord, employ 700 men. The shipping trade is extensive. There is a shipping line to New York and Java, and several lines to ports on the Baltic. For the large transit-trade, chiefly with Germany, there are about 30 steam lines to England, 5 to Scotland, and 2 to Ireland. About four-fifths of the steamers and one-third of the sailing-vessels that enter the port are from Britain or her colonies.

Refined sūgar is extensively exported. Large quantities of butter, cheese, yeast, madder, flax, and fruits are annually sent to Great Britain; also immense numbers of cattle, calves, swine, and sheep.

The municipal govt. consists of a burgomaster, 4 wethouders (aldermen), and 34 councilors. R. had 4 Dutch Reformed churches, 1 French Prot., 1 Eng. Episc., 1 Scotch Presb., 6 Rom. Cath. chapels, and 1 Jewish synagogue. The schools are good, and subsidized by the municipality. There were 3 for gymnastics; normal school; one for training boys for sea; medical school; institute for the deaf and dumb, at which 93 boys and 52 girls were educated by 15 teachers, 64 of the pupils being admitted free; grammar school called the Erasmus; and several institutions for arts, sciences, architectural drawing, and music. The medical school has an anatomical museum; the Batavian Soc. has a good

collection of philosophical instruments, books, and models. The Museum Boijmans, with many valuable paintings and works of art, was destroyed by fire 1863. The Exchange, built 1722, is a plain, rectangular building of hewn stone. The hospital, on the Coolsingel, a handsome structure, with excellent internal arrangements, can receive 250 patients. R. has also a children's hospital, a great boon to the poor. The St. Laurence Church, built at the end of the 15th c., is a spacious building, ornamented with a high truncated tower, whose top is reached by 326 steps: it has a splendid organ, and several beautiful marble monuments, in honor of De Witt, Admiral Kortenaar, and other distinguished men. A bronze statue of Erasmus stands on the Great Market, and the house in which he was born is pointed out in the Breede Kerk Straat, which leads to the Great Church.—R. is rapidly extending. Pop. (1872) 123,677; males 58,411, females 65,266; (1901, Dec.) 341,051. About two-thirds of the people are Protestants, nearly one-third Rom. Catholics, 4,500 Jews.

ROTTI, or ROTTEE, *rŏt′tē:* island in the Indian Archipelago, belonging to the Dutch; s.w. of Timor; 10° 39′—10° 56′ s. lat., and 122° 57′—123° 29′ e. long.; greatest length, e. to w., 36 m.; breadth from Termano on the n. to Tilly on the s., about 11 m. The surface is nowhere more than 600 ft. above the sea, and the fertile soil produces rich vegetation. The most valuable product is the Lontar palm, the juice of which, either fresh or thickened by boiling, and preserved in pots, forms a leading article of food. Next in importance is the Gabang tree, which bears large quantities of fruit in size and shape like apricots, the fibre yielding a good tow, and the pith a sort of sago. Cocoa-nut, plantain, banana, and mango trees are abundant. There is great variety of timber-trees, e.g., beautiful ebony, mahogany, and several sorts well adapted for ship-building. R. is famed for a small but hardy race of horses; and has buffaloes, sheep, goats, swine, and deer. Edible nests, trepang, tortoise-shell, and wax, also horses, swine, palm-wine, syrup, sugar, and native sail-cloth, are exported to Timor; and cotton fabrics, cotton, beads, iron, iron-work, powder, guns, and arrack received in exchange. Pop. 75,000.

ROTTLERA, *rŏt′lĕr-ą:* genus of trees of nat. order *Euphorbiaçeæ*, with a 3–5 parted calyx, no corolla, 30–40 stamens springing from the convex receptacle, and a 2–4 coccous capsule, each portion having one seed. The species are rather small trees, found in India and other tropical parts of Asia. *R. tetracocca* grows in Sylhet, and yields a hard and valuable timber. *R. tinctoria* is native of India, from the Coromandel coasts to the n. forests. Its capsules are covered with short, stiff hairs, which, when rubbed off, have the appearance of fine red powder, are used in India for dyeing silks scarlet and orange, and form an article of commerce. The color this dye-stuff yields is of great beauty and stability.

ROTTWEIL, *rŏt′vīl:* small town of Würtemberg, on the Neckar, 38 m. e.n.e. of Freiburg in Baden. It contains a beautiful exchange and a number of interesting churches. Its manufactures are gunpowder, silk, cotton, and woolen fabrics, and its corn-market is one of the most important in the kingdom. Pop. 8,000.

R. is the site of an ancient Roman colony, among whose ruins was discovered, besides many other valuable antiquities now preserved in the buildings of the gymnasium, a piece of mosaic-work, upon which are an excellent drawing of Orpheus and a number of profile drawings of the larger kinds of game, of chariot-races, and of gladiatorial encounters, with other drawings.

ROTULA, n. *rŏt′ū-lą* [L. *rŏtŭla*, a little wheel—from *rota*, a wheel]: in *anat.*, the patella or knee-pan, situated at the front of the knee-joint.

ROTUMA, *rō-tō′mâ:* small island in the s. Pacific, formally annexed to the Fiji Islands by Great Britain 1880; about 250 m. n.n.w. from the nearest island of that group; 14 sq. m. The soil is fertile, and readily produces sugar, coffee, cotton, yams, taro, bananas, etc. The natives are friendly to the white man. R. was discovered by Capt. Edwards in his search for the mutineers of the *Bounty* 1791. Pop. (1884) 2,414.

ROTUND, a. *rō-tŭnd′* [L. *rotun′dus*, wheel-shaped—from *rota*, a wheel; It. *rotondo*]: round; spherical; inclining to be round. ROTUNDITY, n. *-tŭn′dĭ-tĭ* [L. *rotun′dĭtas*]: roundness; sphericity. ROTUN′DA, n. *-dą*, or ROTUN′DO, n. *-dō*, building that is round both on the outside and inside, as the Pantheon of Rome.

ROTURIER, *rō-tü-rĭ-ā′* [according to Littré, from *ruptura*, Low Latin for ground *broken* by the plow]: one of the ignoble classes, who, during the early period of the feudal system, were separated from the high-born by almost as broad a line of demarkation as that which divided servitude from liberty. When the feudal theory of knight-service came to be recognized as the only principle of gentle tenure, the term R. came to be applied to the part of the population who continued to hold by the older or allodial tenure.

ROUARIE, *rô-â-rē′*, ARMAND TAFFIN, Marquis de la: 1756, Apr. 14—1793, Jan. 30; b. Rouarie Castle, near Rennes, France: soldier. He joined the king's bodyguard when 19 years old; was soon afterward dismissed for duelling; came to the United States when 21, and received a commission as col. in the army; and served gallantly till the close of the revolutionary war, with Lafayette, Gates, and Washington, retiring with the rank of brig.gen. He lived in France in private life till 1788, when he was chosen a deputy to obtain from the king a pledge that he would preserve the privileges of Brittany, and for his zeal was confined in the Bastile a short time. Subsequently he planned a union of the provinces of Brittany, Anjou, and Poitou: but he died before the uprising of Les Chouans.

ROUBAIX, *rô-bā′:* flourishing manufacturing town in n. France, dept. of Nord, six m. n.e. of Lille. It has risen into importance in the present century, as a great seat of manufacturing industry. Numerous mills and factories, as well as dye-works and tanneries, are in operation. R. rivals Elbeuf and Louviers for woolen cloths and carpets, and vies with Laval and the rest of Flanders in linen manufactures. R. is the seat of the Nat. School of Industrial Arts. Pop. 125,000.

ROUBLE, or RUBLE, or RUBEL, n. *rô′bl:* Russian silver coin, the unit of the Russian money system. Pieces of peltry formed, in early times, the ordinary medium of exchange in Russia; but about the beginning of the 15th c., silver bars came more into use for larger payments; and to make up intermediate sums, pieces of the bars were cut off. It was in this cutting off—in Russian, *rubat*—that the name R. originated. The present silver R. is equivalent to nearly 80 cents. Half, quarter, fifth, tenth, and twentieth parts of a rouble also are coined in silver; and gold coins of nominally five roubles (demi-imperials) and three roubles (imperial ducats) also are in circulation. In 1877 the *paper rouble* had fallen from about 75 cts., its nominal value, to about 35 cts. The rouble is divided into 100 kopeks.

ROUÉ, n. *rô′ā* [F. *roué*, one broken on the wheel—from *rouer*, to break on the wheel; *roue*, a wheel—from L. *rota*, a wheel]: one devoted to a profligate life; a confirmed rake.

ROUEN, *rô-ŏng′:* one of the principal manufacturing and trading cities of France, cap. of the dept. of Seine-Inférieure, and ancient cap. of Normandy; on the right bank of the Seine, 87 m. n.w. of Paris by railway. The ramparts have been converted into spacious boulevards, which, as well as the quays that line the river-banks, are little inferior to the boulevards and quays of Paris. The deep waters of the Seine form a commodious port, generally crowded with vessels of all nations, from 300 tons to the smallest river-craft. A stone bridge and a suspension-bridge connect the Faubourg St. Sever, on the left bank of the river, with the city, which is at once one of the most picturesque and one of the busiest and liveliest places in France. Some of the streets are well and regularly built, with fine modern stone houses; but the greater part of R. consists of old, ill-built, but picturesque streets and squares, with tall, narrow, quaintly carved, wooden-bound, and gabled houses. Among the many beautiful Gothic churches for which it is noted, the finest are the cathedral and the church of St. Ouen. The former, one of the noblest metropolitan churches of France, is a remarkably fine specimen of Gothic architecture. It is of cruciform shape, and has two towers at the sides of the w. entrance, and a lofty tower (464 ft. high) terminating in a cast-iron spire, which was erected after the destruction by fire 1822 of the old wooden belfry, which

bore the date 1544. It was erected by Philippe Auguste between 1200 and 1220, and contains, in its 25 highly ornamented chapels, numerous monuments of great interest—among others, those of Duke Rollo of Normandy, and his son, William Longsword. The heart of Richard Cœur de Lion, buried in this church, is now preserved in the extensive Museum of Antiquities. The church of St. Ouen, as large as the cathedral, is one of the most interesting buildings in R.; and in its present restored state presents a pure and elegant specimen of Gothic architecture. Among the other buildings, the finest are the Palais de Justice, belonging to the 15th c., built for the parliament of the province; the Hôtel de Ville, with its public library of 110,000 vols., and its gallery of pictures; and the Hôtel Dieu, one of the largest of its kind. R. has numerous benevolent, educational, and scientific institutions; and next to Lyons is perhaps the most important manufacturing town in the republic. The principal branches of industry are cotton manufactures, including the checked and striped cottons specially designated as *Rouenneries*, nankeens, dimity, lace, cotton-velvets, shawls, etc. R. has extensive manufactures also of hosiery, mixed silk and wool fabrics, blankets, flannels, hats, cordage, cotton and linen yarns, shot, steel, lead, chemicals, paper, etc. Ship-building and machine-making in various departments are carried on. R. is the seat of an abp., a high court of justice for the dept., a tribunal of first instance, and of commerce, etc. Pop. (1886) 107,163; (1891) 112,352; (1901) 116,316.

Historȳ.—As the original capital in France of the Northmen, who took possession of it 842, and settled there in accordance with the agreement which Charles the Simple was compelled to make with their leader Rollo, R. presents special points of interest to Englishmen. It was the residence of the dukes of Normandy till Duke William, 1066, on his conquest of England, transferred the seat of his court to London; and, till the time of Richard Cœur de Lion, it continued the cap. of Normandy, and was the seat of govt. of the Norman possessions of William the Conqueror's successors; but 1204 it was taken by siege by the French king, Philippe Auguste, and annexed with the main part of the duchy to the French crown. During the wars of Henry V. and Henry VI. of England, it was under the power of the English 1419–49, when it was retaken by the French under Charles VII. It was during this occupation by the English that Joan d'Arc was burned alive (1431) as a witch in the square of the city, in which stands her statue, and which is called, in memory of her, Place de la Pucelle. R. was occupied by German troops in the war of 1870-1.

ROUGE, n. *rôzh* [F. *rouge*—from L. *rubĕŭs*, red: L. *ruber*, *rufus*, red]: preparation of safflower, used to give artificial bloom to the cheeks, and, when properly prepared, said to be perfectly harmless in such use. The color is obtained through a long and elaborate process, by precipitating it from the safflower, by citric acid or lemon juice, on to prepared cotton. It is then washed out of the cotton with a solution of soda, and again precipitated with citric acid; but previous to adding the acid, finely powdered French chalk is added to the solution, which becomes colored, and falls down, when the precipitation takes place, giving the necessary body and a peculiarly silky lustre to the coloring matter. *Jeweller's rouge* is a preparation of iron formed by calcining sulphate of iron or green vitriol, until the water of crystallization is expelled; it is then roasted in a strong heat, and afterward washed with water, until it no longer affects litmus paper. *Liquid rouge* is the red liquor left in making carmine. ROUGE, a. red: V. to tinge the cheeks with rouge; to tinge or paint with rouge. ROUG'ING, imp. ROUGED, pp. *rôzhd:* ADJ. tinged with rouge, as the face. ROUGE CROIX, one of the pursuivants belonging to the heraldic establishment of England, generally allowed to be the most ancient. ROUGE DRAGON, title of a pursuivancy founded by Henry VII., the day before his coronation.

ROUGE-ET-NOIR, *rôzh-ā-nwâr'* [F., 'red-and-black'], or TRENTE-UN ['thirty-one'], or TRENTE ET QUARANTE ['thirty and forty']: notorious modern game of chance, played with six packs of cards on a table covered with green cloth. The table is divided into four portions, each marked in the centre with a diamond, the diamonds being alternately red and black; and these quarters are further separated, two and two, by bands which cross the table at its narrowest part. At the end of the table is a series of concentric bands of yellow color. *Tailleurs* (or dealers), including the *croupier*, manage the table, take charge of the bank, and keep an eye on the players. Each player must stake his money on one of the four chances, denominated *noir*, *rouge*, *couleur*, and *l'inverse;* and the stakes are laid on the table—those for the noir being laid on either of the quarters marked with a *black;* those for the rouge on either of the quarters marked with a *red* diamond; those for the couleur on one of the transverse bands; and those for the inverse on one of the yellow circles at the end of the table. The tailleur then deals a limited number of the cards, laying them face upward, side by side, on the table; and the question of winning or losing is determined by such points as the color of the first card tabled by the tailleur, or the number of pips in the first row of cards tabled, etc.—The game requires no skill and is of use only to gamblers: the odds are always in favor of the bank. Together with roulette, this game has been forbidden by law in some countries.

ROUGET, GEORGES, *zhōrzh rô-zhā:* French painter: b. Paris, 1784, May 2; d. there, 1869, Apr. 9. He studied at the Ecole des Beaux Arts, and later under David, who employed him to finish many of his pictures. He became in consequence an imitator of that master. He painted a large number of portraits, those of Louis XVIII. and of Charles X. being noteworthy, and historical subjects. Of the latter are: *French Princes Paying Homage at the Cradle of the King of Rome* (1812); *Death of St. Louis* (1817), at Versailles; *Œdipus and Antigone* (1819), at Rouen; *Francis I. Pardoning Rebels of La Rochelle* (1822); *Marriage of Napoleon and Marie Louise* (1837); *Napoleon Receiving the Decree of the Senate Proclaiming Him Emperor* (1838); *Death of Napoleon* (1846). Several of the churches of Paris contain religious subjects painted by him; but the major part of his work may be seen at the Versailles Museum.

ROUGET DE LISLE, *rô-zhā dė lēl,* CLAUDE JOSEPH: French song-writer: b. Lons-le-Saulnier, France, 1760, May 10; d. Choisy-le-Roi, 1836, June 27. He published *Fifty French Songs, Words of Various Authors, Set to Music by Rouget de Lisle* (1826); etc., but is chiefly remembered as the author of both the words and music of *The Marseillaise.*

ROUGH, a. *rŭf* [Ger. *rauch;* Dut. *ruych;* AS. *hruh* or *ruh;* Dan. *ru,* rough, hairy]: not smooth or plain; rugged; not wrought or polished; violently agitated, as the sea; stormy, as the weather; harsh to the taste or ear; grating; rugged of temper; coarse in manners; crude; imperfect; hard-featured; hairy or shaggy; in *OE.,* terrible; dreadful: N. state of being coarse or unfinished, as articles *in the rough.* ROUGH'ING, imp. ROUGHED, pp. *rŭft.* ROUGH'LY, ad. *-lĭ,* in a rough manner; with uneven surface; harshly; severely. ROUGH'NESS, n. *-nĕs,* the quality or state of being rough; unevenness; harshness; asperity; ruggedness of temper; coarseness of manners. ROUGH'ISH, a. *-ĭsh,* rather rough. ROUGHS, n. plu. *rŭfs,* coarse unmannerly men; rowdies; blackguards; ruffians. TO ROUGH IT, to put up with inconveniences and hardships, as in traveling. ROUGHING-IN, in *arch.,* a plastering of three coats on brick or stone work. ROUGH-CAST, n. in *sculp.,* rude or first model: in *building,* fluid mortar mixed with fine gravel, making a coarse plaster for a finishing coat on outer walls: v. to mold in a rude unfinished state. ROUGH DIAMOND, a diamond uncut; a person possessing great worth, but rude and unpolished in manners. ROUGH DRAFT or DRAUGHT, a first or unfinished sketch or representation. TO ROUGH-DRAW, to draw or delineate coarsely. ROUGH-DRAWN, pp. ROUGH-FOOTED, a. feather-footed, as in the case of certain birds. ROUGH-HEW, v. *-hū,* to give the first form or shape to anything; to hew rudely. ROUGH-HEWN, pp.: ADJ. rugged; unpolished. ROUGH-RIDER, in the *army,* a non-commissioned officer who assists the riding-master of a cavalry regi-

ment; one who breaks horses. To ROUGH A HORSE, to break in, particularly for military service; to make its shoes rough. ROUGH-SHOD, a. having shoes armed with points. To RIDE ROUGH-SHOD, to pursue a course selfishly, regardless of the consequences to others. To ROUGH-WORK, to work coarsely, or without regard to nicety of finish. ROUGH-WROUGHT, a. done coarsely. ROUGHINGS, n. plu. *rŭf'ĭngz*, grass that follows mowing or reaping. IN THE ROUGH, in the original material; in an unwrought condition. A ROUGH CUSTOMER, in *familiar language*, a troublesome and somewhat dangerous person to deal with. ROUGHEN, v. *rŭf'n*, to make rough; to become rough. ROUGHENING, imp. *rŭf'nĭng*. ROUGHENED, pp. *rŭf'nd*.—SYN. of 'rough, a.': rugged; austere; harsh; inelegant; coarse; uncivil; severe; rude; abrupt; indelicate; unpolished; unfinished; disordered; tempestuous; stormy; boisterous; hairy; uncut; uneven; shaggy; ragged; disordered; uncourteous; hard.

ROUGH-LEG: a buzzard-hawk of the genus *Archibuteo*, especially *A. lagopus*, so called because feathered down to the toes. It is known throughout the northern regions of both continents, and is typically whitish, streaked with rust-red; but the American form best known is a melanotic variety (*A. lagopus sancti-johannis*), which frequents the maritime districts of the Atlantic coast, and is less often seen in the interior, except northerly. The western United States and Pacific coast have a second species (*A. ferrugineus*), called in California squirrel-hawk, which is rusty brown, marked with gray, white, and black; or sometimes plain dark chocolate brown. These hawks are large (23 to 24 inches in length), and of fierce and noble appearance. Their quarry, though diversified, is always humble; they prey upon various field-mice and other very small quadrupeds, lizards, and frogs, and even insects, rarely attacking birds of any kind, and then only the most defenseless. Open fields, especially in the vicinity of water, are their favorite resorts. They appear heavy and indisposed to active exertion, flying slowly and heavily, and often remaining long motionless on their perch. They show some analogy to the owls in points of structure, as well as in their partially nocturnal habits. The nest is ordinarily built of sticks, etc., in a high tree; sometimes, however, on cliffs. The eggs, three or four in number, measure about $2\frac{1}{3}$ by $1\frac{3}{4}$ inches, largely blotched with different shades of brown, sometimes mixed with purplish slate markings.

ROUGH RIDERS: a name borne by the 1st Regiment of United States cavalry and also by the 2d United States volunteer cavalry in the Spanish-American war. The original Rough Riders were the men who carried messages through the western states before the organization of the pony express in 1859, and the name was used by William F. Cody in his 'Wild West' show, which con-

tained a 'Congress of the Rough Riders of the World.' The army regiments were thus named because of the great number of western ranchmen in their ranks, and played a prominent part in the Spanish-American war. The first regiment was organized by Leonard Wood, who was commissioned colonel, and Theodore Roosevelt became lieutenant-colonel. Before the disbanding of the regiment in 1898 a Rough Riders' Association was formed, to which all members of the regiment are eligible, the right of membership to descend to the eldest son.

ROUGH-WINGED SWALLOW: a small blackish migratory swallow (*Stelgidopteryx serripennis*) of the United States generally, where it nests in summer in holes in banks, in crevices of rocks, etc., and has the general habits of the bank swallow (q.v.). The genus, of which several other species are known in Central and South America, is peculiar in having the outer web of the first wing-quill converted into a series of stiff recurved hooks, which may be supposed useful in creeping into their holes and in clinging to vertical or overhanging surfaces. Considering the general likeness of the bird otherwise to the bank swallow, the fact that this species often makes its nest and lays its pure white eggs in some cranny about a bridge or building is noteworthy. Consult Coues, *Birds of the Colorado Valley* (1878).

ROUGON-MACQUART, *rô-gôn mâ-kâr*, Les: a series of 20 novels by Emile Zola, relating the history of a family under the Second Empire and published 1871-93. The novels were intended to form a scientific study of heredity as well as a photograph of French social life. The series begins with *La Fortune des Rougons* (1871), and this was followed by *La Curée* (*Rush for the Spoil:* 1872); a study of the financial world of Paris at the time Haussmann laid out the boulevards; *La Conquête des Plassans* (1874); *Le Ventre de Paris* (*The Markets of Paris; or Fat and Thin:* 1875); *La Faute de l'Abbé Mouret* (1875); *Son Excellence Eugène Rougon* (1876), a story of political life; *L'Assomoir* (*Drink:* 1877), a story of life among the workmen of Paris; *Une Page d'Amour* (1878), a physical and psychological study of the various phases of a woman's passion; *Nana* (1880), a study of the life of a courtesan and actress; *Pot-Bouille* (1882), a study of the life of the bourgeoisie; *Au Bonheur des Dames* (*The Ladies' Paradise:* 1883), a study of the mammoth department stores; *La Joie de Vivre* (1884); *Germinal* (*Master and Man:* 1885), a study of life in the mines; *L'Œuvre* (1886), a study of artist life; *La Terre* (1888), a study of peasant life and the greed for land; *Le Rêve* (1888); *Le Bête Humaine* (1890), a study of railway life; *L'Argent* (1891), a study of stock speculation; *La Débâcle* (*The Downfall:* 1892), a study of the Franco-Prussian war and the Siege of Paris; *Le Docteur Pascal* (1892). In this last story

Pascal Rougon collects all the data relating to his family, and sums up their history.

ROUHER, EUGENE, *ė-zhān rô-ār:* French statesman: b. Riom Nov. 30, 1814; d. Paris Feb. 3, 1884. He studied law and practiced his profession in Riom until his election to the Legislative Assembly in 1849. He became a confidant of Napoleon III. and was appointed minister of justice. In 1863 he was made minister of state, and in 1870 became president of the Senate and chief of the Napoleonic cabinet. In 1860 the famous treaty with England was effected largely through his instrumentality in which the free trade policy of Napoleon was inaugurated. His activity in state affairs continued until the fall of the empire when he fled from France. In 1872 he returned as the Corsican representative in the Assembly, and remained in office until 1875. He was to the last the leader of the Bonapartists.

ROULADE, n. *rô-lâd'* [F.]: in *mus.*, an embellishment; a flourish; an ornamental passage of runs.

ROULEAU, n. *rô-lō'* [F. *rouleau,* a roll—from *rouler,* to roll (see ROLL)]: a little roll; a roll of coin made up in paper.

ROULETTE, n. *rô-lĕt'* [F. *roulette,* a little wheel—from F. *rouler;* OF. *roller,* to roll—from mid. L. *rotulārĕ,* to roll—from L. *rŏtŭla,* a little wheel; *rota,* a wheel]: small instrument used by engravers to produce a series of dotted lines on a plate; game of chance (see below): a culinary delicacy.

ROULETTE, *rô-lĕt':* game of chance which, from the end of the 18th century till the beginning of 1838, was in vogue over all others in Paris. It continued to be played at German water-places till 1872, when it ceased according to the terms of a law passed four years before. Roulette is still played at Monaco, in Italy. As much as $540,000 a year used to be spent in the papers of Paris alone advertising this game, which, being purely one of chance, is a gambler's game. It is played on an oblong table covered with green cloth, which has in its centre a cavity a little more than 2 ft. in diameter in the shape of a punch-bowl. This cavity has its sides fixed, but the bottom is movable round an axis in the centre. Round the circumference of this movable bottom are 38 holes, painted in black and red alternately, and numbered. Those who manage the table and keep the bank are called *taillcurs;* one of whom puts the movable bottom in motion and at the same instant throws into its cavity an ivory ball in a direction opposite to the motion of the bottom; the ball, after several revolutions, falls into one of the 38 holes above mentioned, the hole into which it falls determining the gain or loss of the players, each of whom has previously selected the number of the hole on which he stakes his money. There is an elaborate system of combinations of chances offering the tempting variety for selection in which gamblers delight.

ROUMANIA.

ROUMANIA, or RUMANIA, *rô-mā′nĭ-a:* country comprising the two states, MOLDAVIA and WALACHIA—the so-called *Danubian Principalities*—which since 1861, Dec. 23, have been united under one prince and one administration, and officially bear the single name ROUMANIA or RUMANIA. Formerly subject to the Porte, R. proclaimed its own absolute independence 1877, and had its claim recognized at the Berlin Congress 1878. It was proclaimed a kingdom 1881. R. obtained the Dobrudscha (q.v.) 1878, and Roumanian Bessarabia (q.v.) was ceded to Russia. The area is 50,720 sq. m.—Pop. of R., though the loss of Bessaraia was not balanced by the gain of the Dobrudscha, 5,912,520.

1. MOLDAVIA (Ger. *Moldau*, Turk. *Bogdan*) is bounded n. and e. by Russia, s. by Walachia, w. by Hungary; area, since the cession of Bessarabia, about 15,000 sq. m. The country forms, geographically, part of the great plain of s. Russia, except toward the w., where there are spurs from the Carpathians. It is watered by the Pruth, the Sereth, and the Danube, and is almost everywhere fertile, producing grain, fruit, and wine. But the riches of the country consist mainly in its cattle and horses, of which immense numbers are reared on its splendid and far-stretching pastures; swine and sheep also are numerous; and the rearing of bees is extensive, favored by the multitude of lime-trees. The great plagues of the land are locusts and earthquakes. Minerals and precious metals are said to be abundant, but they have not been worked: there are a few salt-pits near Okna, in the Carpathian Mountains. Trade is almost exclusively in the hands of the numerous Jews, Germans, Greeks, and Russians who have settled in the country. The cap. of M. is Jassy (q.v.); but the great centre of trade is Galacz (q.v.), where, of late, several British merchants have established houses. The principal exports are grain, wool, lambs' skins, hides, feathers, maize, tar, tallow, honey, leeches, cattle, and salt (in blocks); the imports are chiefly the manufactured products of w. Europe. M. is divided into 13 districts, each of which has a prefect or gov., a receiver-gen. of taxes, and a civil tribunal consisting of a pres. and two other judges.

2. WALACHIA, the larger of the United Danubian Principalities, is bounded n. by the Austrian empire and Moldavia, e. and s. by the Danube, w. by the Austrian empire and the Danube; length from the w. frontier to Cape Kaliakra on the Black Sea, 305 m.; greatest breadth, 130 m.; 27,500 sq. m. The greater part of W. is flat; but in the n., where it borders on Hungary and Transylvania, it gradually rises into a great mountain-wall, impassable except in five places. It is destitute of wood throughout almost its whole extent; and especially along the Danube, is covered with swamps, miles on miles in breadth. The principal river flowing *through* the country is the Aluta, which joins the Danube at Nikopol. The climate is extreme; the summer heats

are intense; in winter, the land lies under deep snow for four months. The principal products are corn, maize, millet, wine, flax, tobacco, and olive-oil. The vast treeless heaths afford sustenance to great herds of cattle, sheep, and horses. As in Moldavia, agriculture is an important industry. The swampy districts of the s. are inhabited by immense numbers of wild water-fowl. In minerals—especially gold, silver, copper, and rock-salt—the soil is rich, but only the salt is extensively worked. Bucharest is the cap. of Walachia and of Roumania.

ROUMANIA.—*Administration.*—The King of R.—till of late styled by the Roumans *Domnu* or *Domnitor;* officially called by the Sublime Porte, *Woiwod* (Prince); by the Turks generally, *Ijauer-Effendi* (Lord of the Unbelievers); and by the Russians, *Hospodar* or *Gospodarj* (Prince)—is now the head of an independent, constitutional, and hereditary monarchy. By the treaty of Paris (1856) and the Convention (1858), Moldavia and Walachia were politically united under one prince, with a special ministry for each country, two elective assemblies, and a central commission, which had its seat at Fokshani. But 1861, Nov., the Turkish sultan sanctioned the administrative union of the two states; and in the following month, it was publicly proclaimed at Bucharest and Jassy. The first ruler of R., Prince Alexander John Couza, was forced to abdicate 1866, when Karl I., son of the prince of Hohenzollern-Sigmaringen, was chosen his successor. At the same time, a new and more popular constitution was adopted by a constituent assembly elected by universal suffrage. The legislative power is vested in two houses, a senate, and a chamber of deputies. The former consists of 120 members, elected for eight years; and the latter of 183, elected for four years. The members of both houses are chosen by indirect election—i.e., the first voters nominate electors, who choose the members. All citizens who have reached their 25th year, and who can read and write, are voters in the first instance, and every Rouman who possesses a small yearly income is eligible for a seat in parliament. The king has a suspensive veto over all laws passed by both chambers. He is also chief of the executive, which is composed of a council of seven ministers, heads of the departments of the Interior, of Foreign Affairs, of War, of Finance, of Justice, of Commerce and Agriculture, and of Religion and Public Instruction. Judges are removable at the pleasure of the superior authorities. The legal codes are founded on the civil law and the customs of the Principalities; but though the system of jurisprudence has been much amended, many reforms remain to be effected, especially in administration of the laws, which is said to be most corrupt.

Religion.—The established religion of R. is that of the Greek Church, to which nearly the whole population belong; but all forms of Christianity are tolerated, and their professors have equal political rights. At the

head of the Greek clergy stand the metropolitan archbishops of Moldavia and of Walachia, the latter of whom is primate of R. Every bishop is assisted by a council of clergy, and has a seminary for priets; the superintendent of the preaching clergy is the *Proto-papa* of the diocese. The ecclesiastical wealth of the country was formerly very great, but the increased expenditure that followed the union of the two states rendered a scheme of spoliation the only means left to the government to extricate itself from its difficulties—in a word, the convent-properties were wrested from the hands of the Greek monks, and placed under the administration of the state. It had been the fashion to establish such convents in Turkey as supports to the orthodox faith, and the institutions in the Principality itself were richly endowed in land and other ways: it was resolved to apply the revenues to the relief of national needs, such as schools, hospitals, the support of the poor, etc., and to give only the surplus to the clergy. This has considerably increased the revenue of the state. The administration, however, is now put on a better footing.

Education.—There are more than 2,700 elementary schools, besides normal schools, gymnasia, private schools, etc., in all about 2,500 schools. There are two universities. Education is gratuitous and compulsory. There are numerous French boarding-schools, and French is now the language of the educated circles, especially ladies (as Greek formerly was), but the state language and the proper national tongue is the Romanic.

Army and Navy.—In 1902 the permanent army (peace footing) comprised 3,280 officers, 60,000 men, 11,930 horses, and 390 cannon, and the war effective was 3,948 officers and 170,000 men, including the Dobrudscha division; in all about 174,000 officers and men. Under existing laws every male citizen on reaching his majority is liable to three years' service in the active army. His assignment is by lot, and all not drawn for the permanent army are assigned to the territorial army for four years' service in the cavalry and five years in the infantry. The army corps comprised 10,000 cavalry; 8,500 artil.; 4,000 engineers; 85,000 inf.; and 17,000 staff and general services. In 1902 the strength of the army on a peace footing was 3,280 officers, 60,000 men, 11,930 horses and 390 guns. The territorial army consisted of 72,000 men and 7,500 horses. The war strength was put at 3,948 officers, 170,000 men and 43,114 horses. The fortifications are at Galatz on the Danube, at Nemolassa on the Sereth and at Focsani to the n. w. near the Sereth. The navy 1902 comprised 1 protected 18 knot cruiser; 1 composite screw brig; 7 gun-boats; 8 torpedo boats; and several dispatch and revenue vessels.

Commerce.—In 1901 the imports were $58,889,154; exports $70,766,175; exports of cereals, chiefly wheat and maize, $49,160,000.

Finances.—Public revenue is derived from direct and

indirect taxation, state monopolies, domains, and public works, such as railroads, post-offices, and telegraph service. There are over 3,000 m. of state railroads, nearly 5,000 m. of telegraph lines, a rapidly developing telephone system, and excellent postal facilities. The government monopolizes also salt and tobacco. The decimal system of coinage, weights and measures has been adopted. The budget estimates for revenue and expenditure average annually $45,000,000 respectively. The public debt amounts to nearly $283,000,000.

Race, Language and Literature.—The great majority of the inhabitants are known in w. Europe as Walachs, but they call themselves Romëni. The Walachs, however, are not confined to the Principalities, but inhabit also the s. part of Bukowina, the greater part of Transylvania, c. Hungary, a part of the Banat, Bessarabia, districts in Podolia and Kherson, and portions of e. Servia. They are found also in Macedonia, Albania, and Thessaly. They are a mixed race, produced by amalgamation of Emperor Trajan's Roman colonists with the original Dacian population; and subsequently modified by Greek, Slavic, Albanian, Hungarian, and Turkish elements. This mixture is seen in their language, one half of whose words are Latin (the Dacian has disappeared), while the remainder is made up of words from the other languages. Roumanian literature, which may be said to date from the 16th c., is rich in popular songs, a collection of which were admirably translated into German by the queen of R. 1881. The chronicles of the country are not without interest. There are numerous political and other journals in the Roumanian tongue.

Social Condition.—Very recent statistics on this point are not attainable. In Moldavia there are rather less, in Walachia considerably more, than 3,000 bojars, besides whom there is an extensive inferior nobility. In Walachia every 28th man is a nobleman, every 133d a merchant; and in the capital, every 20th is a merchant. The free peasants, or yeomen, called *Resesehs*, are not numerous—in all Walachia there are under 5,000. Gypsy communities are an important element in the population: more than 150,000 of this mysterious race are or were serfs belonging to the rich bojars and the monasteries. In 1844, about 30,000 were emancipated, and settled in colonies in different parts of the land: they call themselves *Romnitschel* or *Romni*. The common people are on the whole good-humored, frugal, sober, and cleanly; murder and larceny are almost unknown. The dwellings are most wretched;

composed chiefly of interlaced willow-withes, covered with mud, cane, and straw.

History.—In ancient times, Moldavia and Walachia formed an important part of Dacia (q.v.), and the two countries have in general experienced the same vicissitudes. At the period of the migration of nations, and in the following centuries, they were the scene of the struggles between the Gothic, Hunnic, Bulgarian, and Slavic races—the Avari, Chazars, Petschenegi, Uzi, and Magyars, who alternately ruled or were expelled from the country. These peoples all left traces (more or less) of themselves among the Romanized Dacian inhabitants, and thus helped to form that composite people, the modern Walachs, who, in the 11th c., were converted to the Christianity of the Eastern or Greek Church. Their incursions, however, frightfully devastated the country. In the 11th c., the Kumans, a Turkish race, established in Moldavia a kingdom of their own. Two centuries later, the great storm of Mongols broke over the land. It then fell into the hands of the Nogai Tartars, who left it utterly wasted, so that only in the forests and mountains was any trace left of the native Walachian population. In the latter half of the 13th c., a petty Walach chief of Transylvania, Radu Negru of Fogarasch, entered Walachia, took possession of a portion of the country, divided it among his bojars (noble followers), founded a senate of 12 members, and an elective monarchy; and gradually conquered the whole of Walachia. A little less than a century later (1354), a similar attempt, also successful, was made by a Walach chief of the Hungarian Marmarosh, of the name of Bogdan, to re-people Moldavia. In the beginning of the 16th c., both Principalities placed themselves under protection of the Porte, and gradually the bojars lost the right of electing their own ruler, whose office was bought in Constantinople. After 1711, the Turks governed the countries by Fanariot princes (see FANARIOTS), who in reality only farmed the revenues, enriched themselves, and impoverished the land. In 1802, the Russians wrested from Turkey the right of surveillance over the Principalities. A great number of the nobles —through family marriages with the Fanariots—were now of Greek descent, the court-tongue was Greek, and the religious and political sympathies of the country were the same. Hence the effort of the Principalities 1821 to emancipate themselves from Turkish authority, which was only the prelude to the greater and more successful struggle in Greece itself. In 1822, Russia forced Turkey to choose the princes or hospodars of Walachia and Moldavia from natives, and not from the corrupt Greeks of Constantinople; and after 1829, to allow them to hold their dignity for life. The Principalities, united under one ruler 1858, were brought under one administration 1861, and proclaimed a kingdom 1881, Mar. 27.

A military revolt 1866, Feb. resulted in the deposition

of Prince Couza—Alexander John I. The Count of Flanders, younger brother of Leopold II. of Belgium, was unanimously chosen hospodar; but he at once declined the perilous honor. The choice of the Roumanians then fell on Prince Charles of Hohenzollern-Sigmaringen, who was proclaimed Prince of R. 1866, Apr. 20. The existing constitution was then adopted. When war broke out between Russia and Turkey, 1877, Apr., R. signed a convention with Russia, guaranteeing the Russian troops free passage through Rumanian territory; and May 21 the chamber of deputies at Bucharest decreed the independence of R. War was declared with Turkey; and the Roumanian army bore a creditable part in several battles, especially before Plevna. The Berlin Congress of 1878, which revised the treaty of San Stefano, concluded between Russia and Turkey, and has attempted the most recent solution of the 'Eastern Question,' agreed to recognize the independence of R. It resolved however, much against the will of the government and people of R., to restore to Russia the portions of Bessarabia (q.v.) touching the Pruth and Danube, which were given by the treaty of Paris to Moldavia 1856; and, by a rough sort of compensation, R. received the Dobrudscha (q.v.). It was stipulated that religious dissent should not exclude from civil rights.

ROUMELIA, *rô-mē'lĭ-a* (Turkish, *Rumili*): indefinite term for an important portion of European Turkey, differing widely in area at various times; but denoting generally the region between the Balkans and the Ægean, corresponding to anc. Thrace and part of Macedonia.

ROUME'LIA, EASTERN: province of the Ottoman empire, immediately s. of the Balkans, 13,830 sq. m. Though remaining under the military and political authority of the sultan, it had administrative autonomy conferred on it by the Berlin Congress of 1878. Internal order is maintained by a native gendarmerie and a local militia. The gov.gen., nominated by the Porte, must be ecclesiastically a Christian, and the constitution is settled by a European commission. Since 1885, R. is practically united with Bulgaria (q.v.), the Prince of Bulgaria being appointed gov.gen of E. Roumelia.—Pop. (1880) 815,946, of whom 573,560 Bulgarians: (1900) 1,099,984.

ROUN, v. *rown* [Ger. *raunen*; Dut. *roenen*, to whisper: Sp. *runrun*, rumor, report]: in *OE.*, to address in a whisper; to whisper. ROUN'ING, imp. ROUNED, pp. *rownd*. Also spelt ROUND and ROWN.

ROUNCE, n. *rowns* [probably a mere corruption of *round*—that is, an *in* and *out* again]: the handle of a printing-press, by which the carriage with the form of type is run in under the platen and out again.

ROUND, a. *rownd* [F. *rond*; Ger. *rund*; OF. *roönd*—from L. *rotun'dus*, round—from *rota*, a wheel: It. *ritondo*, circular]: circular; globular; smooth or flowing, as sound or language; not defective or abrupt;

not inconsiderable; large, as a *round* sum; quick, as to travel at a *round* rate; bold, as a *round* assertion; in *OE.*, plain; free without delicacy or reserve: AD. on all sides; every way; not in a direct line; circularly: PREP. on every side of; about; all over: N. a circle; a globe; a sphere; an action or passage in a circle returning to the point of commencement; a walk or circuit performed by a guard or an officer among sentinels; a revolution or rotation; a succession or recurring series, as of duties; the step of a ladder; a volley, as of firearms by troops: in *music*, a short song or catch in parts returning to the same point in the performance (see below): in *OE.*, a dance: V. to make circular; to become round; to encircle; to make protuberant; to make full, smooth, and flowing, as in writing or speaking; to take the edge off anything; in *thieves' slang*, to become an informer; in *OE.*, to grow round in form. ROUND'ING, imp. ROUND'ED, pp. ROUND'LY, ad. *-lĭ*, in a round form; in *OE.*, openly; plainly; completely; vigorously; to the purpose. ROUND'NESS, n. *-nĕs*, the quality or state of being round; cylindrical form; fulness or smoothness of flow; boldness. ROUND'ISH, a. *-ĭsh*, nearly round. ROUND'ABOUT, a. *-ą-bowt*, indirect; circuitous; loose: N. a horizontal revolving-wheel at fairs on which children ride: PREP. around. ROUND-HAND, in *penmanship*, a style in which the letters are formed round and full. ROUND-SHOULDERED, a. having a round back or shoulders. ROUNDHEAD, a term of reproach given to Puritans and the adherents of parliament during the wars of Charles I. who wore their hair closely cut, while the Cavaliers wore theirs in long ringlets. ROUNDHOUSE, the cabin or apartment on the after part of the quarter-deck of a ship; *formerly*, a prison or watch-house. ROUND NUMBER, a number which ends in a cipher, or that is divisible by ten; a complete or full number; an approximate number. AT A ROUND RATE, rapidly. ROUNDRIDGE, to form round ridges by plowing. ROUND ROBIN, n. *rŏb'ĭn* [said to be a corruption of F. *rond*, round; *ruban*, a ribbon]: a written petition or memorial, of the nature usually of a protest or remonstrance, signed with the names arranged in a circle so as not to show who signed first. ROUND TABLE, the table around which King Arthur and his knights sat. ALL ROUND, in every direction. TO BRING ROUND, to restore; to bring to a satisfactory issue; to revive. TO COME ROUND, to revive; to become more placable. TO GET ROUND, to recover; to wheedle; to become able to exercise undue influence over. A ROUND OF CARTRIDGES, one cartridge to each man. A ROUND OF BEEF, the thick fleshy part of the thigh cut through and across the bone at the top. TO ROUND TO, among *seamen*, to turn the head of a ship toward the wind.—SYN. of 'round, a.': cylindrical; circular; spherical; orbicular; whole; unbroken; globular; globose; orbed; full; plump; rotund; —of 'roundness'; rotundity; circularity; plumpness.

ROUND, v. *rownd:* in *OE.*, to whisper. ROUND'ING imp. ROUND'ED, pp. See ROUN.

ROUND, in Music: short vocal composition, generally gay, humorous, in three or more parts, all written on the same clef. Each voice takes up the subject at a certain distance after the first has begun. The second voice begins the first part when the first begins the second part, and the third takes up the first part when the second begins the second part, the whole ending together at the mark of a pause, 𝄐, or a signal agreed on.

ROUND, WILLIAM MARSHALL FITTS: author: b. Pawtucket, 1845, Mar. 26. After an academic education, he began studying medicine at Harvard, but was compelled by ill health to abandon the course, and subsequently engaged in journalism. He was a U. S. commissioner to the Vienna exhibition 1873. While engaged in literary work in New York he became interested in the prison reform movement; 1883 was elected cor. sec. of the N. Y. Prison Assoc.; 1885 aided in the reorganization of the National Prison Assoc. and became its sec.; and 1886 was a delegate to the International Penitentiary Congress in Rome. His experience abroad led him to plan the Burnham industrial farm scheme for unruly boys, at Canaan Four Corners, N. Y., 1887–8. He has published *Achsah* (1876); *Child Marion Abroad* (1876); *Torn and Mended* (1877); *Hal* (1878); and *Rosecroft* (1880).

ROUNDEL, n. *rownd'ĕl*, or ROUND'ELAY, n. *-ĕ-lā* [F. *rondeau;* OF. *rondel*, a rhyme or sonnet that ends as it begins—a dim. of *rond*, round]: a song or dance in which the passages or parts are repeated; small circular shield carried by soldiers in the 14th and 15th c. (see RONDEAU); the guard of a lance; a round guard for the armpit: in *fort.*, a bastion of a circular form: in *her.*, a sub-ordinary in the form of a circle: in *ord.*, a disk of iron having a central aperture, through which an assembling-bolt passes. It serves to separate the stock and cheeks.

ROUND-FISH (*Coregonus quadrilateralis;* see COREGONUS): fish found in w. parts of N. America, from Vancouver's Island northward, in the rivers on the w. side of the Rocky Mountains, and in the Mackenzie and Coppermine rivers. It ascends the rivers in summer to spawn, spending part of its life, like the salmon, in the sea. It is a beautiful fish; seldom more than 2 lbs. in weight, of yellowish-brown color, paler on the sides and belly than on the back, with bright and glittering scales, each edged with a narrow band of dark gray; the mouth very small, no teeth perceptible. Before spawning, it is loaded with fat, which, on the shoulders, almost amounts to a hump; but after spawning, it becomes thin, and its flesh watery and insipid. In a good state, it is delicious food, rivalling in excellence its congener, the Whitefish (q.v.). This fish is an important article of food to the Indians of n.w. America, and vast numbers are caught in the rivers as they ascend from the sea. They ascend in such numbers that no ordinary contrivances of fish-

ing are necessary, but the fish are baled out by baskets, little nets, wooden bowls, or even by the hand. They are cured by splitting and drying, like salmon. The R. readily takes a rough gaudy fly.

ROUNDISH: see under ROUND.

ROUN'DLE, or ROUNDLET, *rownd'lĕt*, in Heraldry: general name for charges of circular form.

Roundle.

ROUND TABLE, KNIGHTS OF THE: see ARTHUR: NOVELS.

ROUND TOWERS: tall narrow towers tapering gradually from the base to the summit; found abundantly in Ireland, and occasionally in Scotland: they are among the earliest and most remarkable relics of the ecclesiastical architecture of the British islands. They have been the subject of endless conjecture and speculation among antiquaries, who have connected them with pagan times and pagan rites; but the controversies regarding them have to some extent been set at rest by the investigations of Dr. Petrie; and there can be now no doubt that they are the work of Christian architects, for religious purposes. They all seem to have been in the immediate neighborhood of a church or monastery, and like other early church-towers (an older invention than bells), they served as symbols of dignity and power—while they were also capable of being used as strongholds, into which, in times of danger, the ecclesiastics, and perhaps the inhabitants of the country around, could retreat with their valuables. After the introduction of bells, they were used probably also as bell-towers. About 118 towers of this description are yet standing in Ireland—20 of which are entire or nearly so; and Scotland has three at Brechin, Abernethy, and St. Eglishay in Orkney. They are usually capped by a conical roof, and divided into stories sometimes by yet existing floors of masonry, though oftener the floors have been of wood. Ladders were the means of communication from story to story. There is generally a small window on each story, and four windows immediately below the conical roof. The door is in nearly all cases a considerable height from the ground. The tower at Devenish, in Ireland (see ill.), a typical example of the class, is 82 ft. high, with conical cap. A battlemented crown occasionally supplies the place of the conical roof, and in one instance the base of the tower is octagonal. Dr. Petrie is inclined to think that a few of these remarkable structures may be as old as the 6th c.; but this great antiquity has been questioned by later writers, particularly Dr. Daniel Wilson, who, from the architectural details, assigns them all to the period 9th—12th c. The source whence this form of tower was derived, and the cause for its long preference by the Irish architects, are unknown. Two round towers, similar to the Irish type, are in the yet extant plan of the monastery of St. Gall in Switzerland, of the first

half of the 9th c.; and, in the Latin description attached to the plan, they are said to be *ad universa superspicienda.* The church and towers as rebuilt at that date are no longer in existence; but the towers were introduced probably in honor of the founder of the monastery, leader of a colony of Irish monks, who, early in the 6th c., carried civilization and Christanity into the fast-

Round Tower, Devenish, Ireland.
(From Fergusson's *Hand-Book of Architecture.*)

nesses of the Alps. The form thus introduced became traditional in w. Germany in the succeeding Romanesque style, where it is seen reproduced with little modification at Worms Cathedral and elsewhere. See Dr. G. Petrie's *Ecclesiastical Architecture of Ireland* (Dublin 1845); Lord Dunraven's *Irish Archæology*, II. (Lond. 1877); Dr. J. Anderson's *Scotland in Early Christian Times* (Edin. 1881).

ROUNDURE, n. *rɔund'ūr* [see ROUND]: in *OE.*, circumference; inclosure.

ROUP, n. *rowp* [AS. *hrepan*, to cry, to call out; *hreop*, cried, called out: Dut. *roepen*, to call; *roep*, a call, a cry]: in *Scot.*, a sale of goods by auction: V. to expose to sale by auction. ROUP'ING, imp. ROUPED, pp. *rowpt.* ARTICLES OF ROUP, conditions under which property is exposed to sale by auction: see AUCTION

ROUP, n. *rôp* [mid. L. *rupĭa*, foul scurf]: a disease in poultry.

ROUSANT, a. *rows'ant* [F.]: in *her.*, applied to a bird in the attitude of rising, as if preparing to take flight.

ROUSAY, *rô'sā*, or ROWSA, *row'sā:* one of the Orkney Islands, between the island of Westray on the n., and Pomona on the s.; 4 m. long, 3 m. broad; hilly, and covered with heath in the centre, but with margin of fertile land along the shore. Pop. (1891) 774.

ROUSE, v. *rowz* [Low Ger. *ruse*, noise, disturbance; Ger. *rauschen*, to rustle: Sw. *rusa*, to rush: Gr. *rhoizos*, any rushing sound, as the whizzing of an arrow; the original sense is preserved in a *rousing fire*—viz., a roaring crackling fire; a *rousing lie*, a very great or astounding lie]: to raise from sleep, or from dulness and inactivity; to excite to thought or action; to drive, as a beast from its lair; to awake. ROUS'ING, imp.: ADJ. exciting; having power to rouse. ROUSED, pp. *rowzd.* ROUS'INGLY, ad. *-lĭ.*

ROUSE, v. *rowz* or *rôz* [Scot. *roose*, to praise: Sw. *rus*; Ger. *rausch*, drunkenness: Gael. *roiseal*, a boast]: in *OE.* and *prov. Eng.*, to praise; to extol; to boast, as when touched with liquor: N. in *OE.*, a bumper; a deep draught; excess of drinking.

ROUSES POINT, *rowss'ĭz poynt:* incorporated village in the town of Champlain, Clinton co., N. Y., named from Jacques Rouse, a Canadian, who settled here 1783. It is pleasantly situated at the n. end of Lake Champlain, ½ m. s. of the Canadian boundary, 24 m. n. by e. from Plattsburgh. It has exceptional facilities for commercial traffic, being a junction of the Canada Atlantic, the Canadian Pacific, the Central Vermont, the Delaware and Hudson, the Grand Trunk, and the Ogdensburg and Lake Champlain railroads, and a port of entry with water communication from the lakes of Canada to the Atlantic *via* Richelieu river, Lake Champlain, Delaware and Hudson canal, and Hudson river. The village contains 4 churches, handsome public school, Rom. Cath. parochial school, excellent hotels, and is growing as a business centre and as a summer resort. It has an abundant water supply. The principal industries are the Champlain Electrotype (book) works, 206 employés, and a box factory and planing-mill. At a little distance n. of the village, commanding the entrance to Lake Champlain, is Fort Montgomery, built where the Richelieu river commences, which connects the lake with the St. Lawrence. The erection of the fort was begun soon after the war of 1812, but 1818 was found to be on Canadian ground and was abandoned, and became known as Fort Blunder. By the Ashburton treaty 1842 it was ceded to the United States, and ultimately completed at the cost of about $2,000,000.—Pop. (1880) 1,485; (1890) 2,100; (1900) 1,675.

ROUSSEAU, *rô-sō'*, Jean Jacques: French author, notable not less for his personal peculiarities and strange fortunes and misfortunes, than for the brilliancy and sentimental enthusiasm of his writings: 1712, June 28—1778, July 2; b. Geneva; of a family originally French, which had been settled there more than a century and a half. His father Isaac Rousseau was a watchmaker. Deprived of his mother a few days after his birth, Rousseau was cared for by his father's sister. At the age of ten he was placed, with a cousin, under the charge of a Protestant pastor of Bossey, near Geneva, with whom he remained two years. At the age of 15 the profession of *procureur* ('attorney') was chosen for him, and he was sent to acquire a knowledge of engrossing, but was soon dismissed as a hopeless subject. In 1725 he was apprenticed to an engraver of Geneva, Abel Ducommun, a harsh and violent man, from whose vulgar tyranny the sensitive and impulsive youth took refuge in flight (1728). Henceforth, to the end of his harassed and melancholy career, he was a wanderer; resting for a brief space in many homes, and making many friends, but always driven from the homes, and robbed (or thinking himself robbed) of the friends. His first protector was a young widow, Madame de Warens, at Annecy, to whose house he was sent in view of his abjuration of Protestantism, and by whose exertions he was placed at a charity-school in Turin. At the school Rousseau was so miserable that he ran off, lived ambiguously for some time with the wife of a merchant, but in spite of his 'innocent passion' was properly kicked out of doors by the irritated husband on his return; after which he became a lackey in the house of the Countess of Vercelli, where (as stated by himself in his *Confessions*) he stole a silk ribbon, and then accused a maid of the theft—in consequence of which both were dismissed. Finally, after certain vagabond adventures he returned to his protectress, Madame de Warens, then at Chambery; but again fell into irregular courses, whereupon she conceived the amazing idea of rescuing the youth (now in his 21st year) from the temptations of vice by becoming his mistress herself. To preserve appearances, however, Rousseau always addressed her as *Mamma*. In 1736, she took Rousseau for his health to a country-house at Les Charmettes, near Chambery. Here (1738) Rousseau fell into a state of hypochondria, and went to Montpelier for medical treatment, but on his way thither fell in with a Madame de Larnage whose charms dissipated all his morbid delusions. On his return he found that Madame de Warens had consoled herself during his absence by another lover, whereupon he betook himself to Lyon, and lived as an unsuccessful house-tutor for three years. Thence he proceeded to Paris, not without some letters of introduction, in the autumn of 1741—under the conviction that he had made certain grand improvements in musical notation (of which in fact he hardly knew the elements), and read a

paper on the subject before the *Académie des Sciences*, but was told that his 'improvements' were 'neither new nor practicable.' However, he managed to live here in an obscure way until, through Madame Dupin, to whose house he had obtained entry, he got the appointment of secretary to De Montaigu, French ambassador at Venice. After a stay of 18 months in the city of islands, he returned to Paris; and having found his superior intolerable, quitted him, and became intimate with Diderot, Grimm, D'Holbach, and Madame d'Epinay, the last of whom, 1756, provided a charming retreat for him in the vicinity of Paris, called the *Hermitage*. There he lived with a young girl Thérèse le Vasseur, a servant at the inn, uneducated, and with little beauty, who bore him five children, all of whom were sent by him to the Foundling Hospital—perhaps the most scandalous act of his strange life. Rousseau late in life married Thérèse, who seems to have been a faithful and affectionate creature. The causes of his rupture with the clique of Parisian philosophers and fine women, to which he had been introduced by De Mably's letters, have been the subject of envenomed misrepresentation in France, but from the thorough researches of Morin (see *Essai sur la Vie et le Caractère de J. J. Rousseau,* Paris 1851), it appears that Rousseau was the victim as usual partly of his own folly, but also more in this case of an odious conspiracy. The conduct of Grimm, in which Madame d'Epinay was involved, was especially shocking. Driven from the Hermitage 1757, he found temporary asylum with the amiable Duke and Duchess of Luxembourg; but, 1762, his writings were pronounced immoral, and to escape arrest he fled to Switzerland, and fixed himself at Motiers-Travers in Neuchatel, under protection of Lord Keith (Earl Marischal), governor of that Prussian province. The intrigues of his enemies pursued him even thither, and after certain paltry persecutions, lay and clerical, he accepted the offer of David Hume to visit England 1766. As so often in similar cases previously, his caprices caused misunderstandings with the Scotch philosopher and his other English friends; and in the following year Rousseau returned to France, and was installed in the castle of Trye by the Prince of Conti. He did not remain long there, nor did he find peace. Gross calumnies were circulated against him, and once more he sought security in precipitate flight. In 1770 he reappeared in Paris, where he lived in obscurity, but not in tranquillity, for eight years, when M. de Girardin offered him a refuge at his estate of Ermenonville, near the capital, in the beginning of 1778; and here the unhappy Rousseau died, probably from a fit of apoplexy, in the same year.

Rousseau's personal character is a puzzle to moralists. There is no denying the vices and meannesses which stained it: these rest on the most unimpeachable testimony—his own. They are set forth with copious and

melancholy sincerity in his *Confessions*, and the very incidents that lead us to condemn him most severely would never have been known to the world had he not chosen to reveal them. But he does not exculpate himself (as many suppose); on the contrary, he covers himself often with bitter and sad reproaches. On the whole, we may incline to believe that he was a warm-hearted, impulsive creature—free from trickiness and suppleness; but full of jealousy and caprice, and with a morbidly excitable natural temperament, aggravated by long persecutions into actual insanity. The errors of such a volatile and irascible nature, unchecked by a moral will, are scandalous; and Rousseau's great defect was in strength of will. 'A man in convulsions,' says Carlyle, speaking of Rousseau (*Heroes and Hero-worship*), 'is not strong, though six men cannot hold him;' and all through Rousseau's spasmodic life, and the splendid sentimentalism of his writings, we are conscious of a 'forcible feebleness,' a lack of genuine intellectual power and insight. He was thoroughly a sentimentalist—that, rather than a deist, as he has often been classed; knowing no religion but a transient emotionalism, and no morality which was not a mere embroidery on that thin fiber. He must be deemed probably insane during the last 15 years of his life. Rousseau's best known works are perhaps the *Emile* and the *Social Contract*. In the first he elaborates a theory of education proceeding on extreme naturalistic bases, demanding that children shall be left to grow up as nearly as possible in a state of nature, on the ground that most of the evil of life emanates from the false circumstances created by civilization. In the *Social Contract* he defends the thesis that government is based on a contract between the various members of the state, each one giving up his own natural freedom in exchange for the freedom of a citizen. The law is the embodiment of the sovereign will, i.e., the will of the people. The most famous of his productions are *Discours sur l'Origine et les Fondements de l'Inegalité parmi les Hommes* (Amst. 1755); *Julie, ou la Nouvelle Héloise* (1760); *Du Contrat Social, ou Principes du Droit Politique* (Amst. 1762); *Emile, ou de l'Education* (Amst. 1764); and *Les Confessions, suivies des Réveries d'un Promeneur Solitaire* (Geneva 1782; posthumous); but beside these he wrote a vast number of miscellaneous essays, letters, and treatises. His *Œuvres Complètes* have gone through innumerable editions. See Morley's monograph (1873).

ROUSSEAU, Lovell Harrison: soldier: 1818, Aug. 4—1869, Jan. 7; b. Lincoln co., Ky. He left school when quite young, but after attaining his majority studied law, and was admitted to the bar 1841; was a member of the Indiana legislature 1844-5; served in the Mexican war, and afterward was in the Indiana senate two terms. He was a successful lawyer in Louisville 1849-61, was a member of the state senate at the opening of the civil

war, used his influence to keep the state loyal to the Union, resigned his seat 1861 and organized troops for the Federal army, served with great credit during the war, and reached the rank of major-general of volunteers. He was elected to congress 1865, became brigadier-general U. S. army 1867, was on duty at Alaska 1867-8, and in the latter year was assigned to the department of Louisiana. He died at New Orleans.

ROUSSEAU, Pierre Etienne Théodore: French painter: b. Paris, 1812, Apr. 15; d. Barbizon, near Fontainebleau, 1867, Dec. 22. He was a pupil of Rémond (1826) and of Lethière, but quickly parted company with all current theories of art, and showed himself an original interpreter of nature, while he fought the battle of the new landscape—'paysage intime'—through the 13 years during which his pictures were excluded from the Salon by the Academical Jury, which has since then been happily abolished. He is the central figure of the Barbizon school and must be looked upon as the founder of the modern school of French landscape painting, as opposed to the Romanticism of Claude Lorraine, Poussin and their followers.

In 1848 he took up his residence on the edge of the forest of Fontainebleau and derived most of his inspiration from the surrounding scenery. How he drew the motif of his work from this environment is seen in the fine picture in the Metropolitan Museum, New York, *Edge of the Woods*. Among other characteristic works may be mentioned: *View of the Valley of Paris and the Banks of the Seine; The Forest Height of Compiègne* (1833); *Avenue of Isle-Adam; Entrance to the Forest of Fontainebleau* (1862); and *Marsh in the Landes* (1854); the last two being in the Louvre. His early style was sketchy with some carelessness of touch, although absolutely sincere and impressionalistic. Latterly he indulged in excessive detail, and never seemed to know when his pictures were finished, but all his landscapes were tinged with the deepest poetic spirit. Yet he never really won recognition during his lifetime, and after an unsuccessful auction sale of his works in 1861 thought seriously of seeking a home in some foreign capital. It is said that the sense of this depreciation wore away his health.

ROUSTABOUT, n. *rowst'a-bowt* [prob. from *roost* and *about*]: laborer employed in loading and unloading heavy freight on board a steamer.

ROUT, n. *rowt* [OF. *route*, a discomfiture: It. *rotta*, the overthrow of an army: L. *ruptus*, broken (see Rout 4)]: the defeat of an army or body of troops; the confusion and disorder attending a defeat: V. to break the ranks of a body of troops, and put them to a disorderly flight; to put to confusion by a repulse or a defeat. Rout'ing, imp. Rout'ed, pp.—Syn. of 'rout, v.': to defeat; discomfit; beat; overpower; overthrow; conquer.

ROUT, v. *rowt* [see ROOT]: to search and grub in the ground, as swine. ROUT'ING, imp.: ADJ. searching or grubbing in the ground. ROUT'ED, pp.

ROUT, v. *rowt* [Icel. *rauta,* to roar, bellow]: in *OE.,* to snore; to bellow, as oxen.

ROUT, n. *rowt* [prov. F. *rota,* tumult: OF. *route,* overthrow, a disorderly crowd: Ger. *rotte,* a gang, a crowd: L. *ruptus,* broken—from *rumpĕrĕ,* to break]: tumultuous clamorous crowd; rabble.—*Rout* was one of the names in London at the end of the 18th and in the early part of the 19th c. for a fashionable assembly or large evening-party now known as a 'soirée,' or an 'at home.'

ROUTE, n. *rôt* [F. *route;* OF. *rote,* a trace, a way—from mid. L. *rupta,* a road—from L. *ruptus,* broken; *rumpĕrĕ,* to break]: the road or way which has been traveled or is to be passed; course; road; journey.

ROUTHIER, ADOLF BASILE: Canadian jurist: b. Saint Placide, Province of Quebec, 1839. He was educated at Laval University, Quebec, and in 1861 was admitted to the bar. He became puisne judge of the superior court of Quebec in 1873, and in 1897 judge of the vice-admiralty court of Quebec. He has also been professor of international law at Laval University. He has written *A Travers l'Europe* (1882-83); *Les échos* (1883); *Conférences et discourses* (1890); etc.

ROUTINE, n. *rô-tēn'* [F. *routine,* rote—from OF. *rote;* F. *route,* a road—from mid. L. *rupta,* a road—from L. *ruptus,* broken; *rumpĕrĕ,* to break]: the round or daily course of business or official duties; any regular habit which does not accommodate itself to circumstances.

ROUVIER, PIERRE MAURICE, *rô-vyā pēēr mô'rēs:* French Prime Minister: b. at Aix 1842. He studied for the legal profession, practiced at Marseilles, and there contributed to the newspapers opposing Napoleon III. He supported the candidature of Gambetta in 1869, and after the revolution of 1870 became secretary to the departmental prefecture, the following year being elected to the National Assembly, and in 1876 to the chamber of deputies. Re-elected on several occasions, in 1881-82 during Gambetta's ministry he was minister of commerce and of the colonies, and again minister of commerce 1884-85 during Ferry's premiership. He was president of the council and minister of finances in 1887, and again minister of finances in the French ministry, 1889; the Freycinet, 1890; Loubet, 1892; and Ribot, 1892, when he withdrew owing to charges of complicity in the Panama scandals. President of the budget for the fifth time in 1894, he spoke authoritatively on fiscal reforms, and notably on direct progressive taxation. Reappointed minister of finances in the Coombes cabinet (1902) his efforts were directed to establishing the equilibrium of the budget without having recourse to loans. He was

elected senator for the department of Alpes-Maritimes in 1903, and became Premier in 1905.

ROVE, v. *rōv* [connected with Eng. *reeve* 2, and *ravel*: Scot. *rove*, to card wool into flakes: Icel. *rifa*, to tear asunder]: to draw through an aperture or eye, as wood or cotton: in *Scot.*, to card wool or cotton into flakes; in *prov. Eng.*, to turn into thread, as 'to *rove* a stocking': N. a roll of wool drawn out and slightly twisted. Ro'VING, imp.: N. the operation of giving the first twist to yarn by drawing it through an eye or aperture (see SPINNING). Ro'VINGS, n. plu. *-vĭngz*, the threads which come from the ends of ribbons or other silken materials. ROVED, pp. *rōvd*. ROVING-FRAME, the machine employed in roving wool or cotton.

ROVE, v. *rōv* [Dut. *roover*, a robber, a pirate; *rooven*, to rob: Icel. *rafa*, to wander about]: to move about without certain direction in any manner; to wander; to ramble; to wander over. Ro'VING, imp.: N. act of one who roves; a rambling; a wandering. ROVED, pp. *rōvd*. Ro'VER, n. *-vėr*, one who wanders about; a pirate. Ro'VINGLY, ad. *-lĭ*. Ro'VINGNESS, n. *-nĕs*, the state of roving. —SYN. of 'rove': to wander; ramble; stroll; roam; range; move about.

ROVE BEETLE, or COCKTAIL (*Staphylinus*): genus of coleopterous insects, type of a family, *Staphylinidæ*, to very many of which the same English names are often extended; belonging to the section *Coleoptera Pentamera*, tribe *Brachelytra*, of which a chief characteristic is the short square elytra, which leave the greater part of the abdomen exposed. The abdomen is soft and flexible, and these insects have a habit of turning up the point of it, particularly when annoyed, whence the name *Cocktail*. They feed on carrion; their larvæ, however, frequently choose vegetable food, e.g., young wheat—cutting the stem underground with their strong mandibles. The bite of some of the species is believed to cause sores.

ROVEREDO, *rō-vā-rā'dō:* city of Austria, in the Tyrol, in a beautiful and picturesque site in the Lagerthal, on the banks of the Leno, close to the left bank of the Adige, 12 m. s. of Trient by railway. Roveredo is one of the most flourishing towns in the Tyrol, and center of the silk-trade. It contains 60 factories, employing 2,300 hands. There is some trade in wine and an active transit-trade. Roveredo was the scene of a battle between the French and Austrians 1796, Sept. 3, 4, in which the latter were defeated. Pop. 10,200.

ROVIGNO, *rō-vēn'yō:* trading-town and seaport of Istria, on a rocky promontory which forms a double harbor 45 m. s. of Trieste. The best Istrian wine is grown in the vicinity, which is abundantly productive also of oil; 30,000 casks of olive oil are exported annually. Shipbuilding, and tunny and sardine fisheries are chief industries. Pop. 10,200.

ROVIGO, *rō-vē′gō:* city in Italy, cap. of the province of R.; on the Adigetto, 38 m. s.w. of Venice. It is a handsome fortified city; has a cathedral which contains some fine paintings, and a picture-gallery. Pop. about 8,000.

ROVI′GO, Duke of: see SAVARY.

ROVUMA, *rō-vō′mâ:* river of s.e. Africa, which enters the Indian Ocean by a spacious bay n. of Cape Delgado. Only a small portion near its mouth was known to Europeans till 1861, when Drs. Livingstone and Kirk ascended it about 30 m. In 1862, with two ships' boats, they reached the rapids which limit the navigation, more than 100 m. from the coast, and half-way to the Nyassa Lake. Passing through gloomy, unhealthful forests of mangroves, they entered a healthful plain, covered with heavy timber and brilliantly flaming tropical plants; but the country was infested by the 'tsetse fly,' a serious obstacle to its development. The river abounded with hippopotami. R. is joined by the Niende, a large affluent from the s.w.; while the main stream comes from the w. and n.w. As the R. is navigable only a few months of the year, it offers little advantage for commerce: but it affords an entrance for exploring the regions between the Nyassa and Tanganyika lakes. In 1878 the sultan of Zanzibar sent an expedition to the Upper R. to settle disputes between the tribes there; and at the same time he sueeeeded in establishing a station on the river. Both Dr. Livingstone and Dr. Kirk, who were unable to pass the rapids which obstruct it, concluded that water-carriage to the Indian Ocean by the R. was impossible. The reported coal of the R. was found 1881 to consist of a bituminous shale of no commercial value.

ROW, v. *rō* [Dut. *roede*, a rod, an oar; *roeden*, to row: Ger. *ruder*, an oar: Sw. *ro;* Dan. *roe;* AS. *rowan*, to row]: to propel with oars, as a boat; to labor with the oar: N. an excursion in a boat with oars. ROW′ING, imp.: N. the act or practice of one who rows. ROWED, pp. *rōd.* ROWER, n. *rō′ėr*, one who rows. ROWLOCK, n. *rō′lŏk*, the part on which the oar rests in rowing. ROWPORT, one of the little openings in small vessels of war for rowing in calms.

Ship's Boat.
a, *a*, Rowlocks (notched).

ROW, n. *rō* [AS. *rœwe;* Ger. *reihe*, a row or line: It. *ruga;* F. *rue*, a row of houses — from mid. L. *ruga*, a furrow, a path, a street]: a line; a file; a series of persons or things placed in a straight line; a line of houses: a street.

ROW, n. *row* [Swiss, *rauen*, to make a dull, hollow, muttering sound: Low Ger. *ruse*, noise, tumult (see ROUSE 1)]: a noisy disturbance; a riotous noise; a broil; a tumult: N. to scold noisily. ROW'ING, imp. ROWED, pp. *rowd*. ROWDY, n. *row'dĭ*, a riotous, turbulent fellow. ROW'DY-DOW, n. *-dow* [an imitative word]: a word expressive of continuous noise. ROW'DYISH, a. *-ĭsh*, characterized by the manners of a rowdy. ROW'DYISM, n. conduct of a rowdy; noisy riotous black-guardism.

ROW, v. *row* [a form of ROLL]: in *Scot.*, to roll; revolve.

ROWAN, *rō'an*, STEPHEN CLEGG: 1808, Dec, 25—1890, Mar. 31; b. near Dublin: naval officer. He came to the United States in early boyhood; was appointed midshipman in the U. S. navy 1826; was promoted passed midshipman 1832, lieut. 1837, commander 1855, capt. 1862, commodore 1862, rear-admiral 1866, and vice-admiral 1870; and was retired 1889. He was on sea duty 25 years, shore and other duty 30 years, and unemployed 10 years. R. was active in the naval operations in the Mexican war; commanded in the first naval action in the civil war; took part in the combined army and navy attack on Roanoke Island; captured or destroyed the Confederate works and fleet in Albemarle Sound; forced the surrender of the works at Newbern, N. C.; commanded the *New Ironsides* in the operations in Charleston harbor; and received a vote of thanks from congress for his naval services.

Rowan, or Mountain Ash (*Pyrus aucuparia*).

ROWAN, *rō-an*, TREE, or MOUNTAIN ASH, or QUICKEN TREE, sometimes RO'AN TREE (*Pyrus aucuparia*; *Sorbus aucuparia* of many botanists): tree abundant in Britain,

especially in the Highlands of Scotland, and in many parts of continental Europe. It does not attain a great size, has in general a very straight erect stem, and is distinguished from other species of Pyrus (q.v.) by pinnated glabrous leaves, terminated by a single leaflet, serrated leaflets, corymbs of small flowers, and small globose fruit. The wood is valued for its compactness. The inner bark and sapwood have a very peculiar smell. In the superstitions of the Scottish Highlands, and also of the Lowlands, a peculiar importance was assigned to the rowan tree, a mere twig of which was supposed to have great efficacy in scaring away evil spirits. It is very ornamental, especially when in fruit. The fruit (*Rowan berries*) is sometimes used for preserves: it has much acidity, and a peculiar bitterness. It is generally red; but there is a variety with yellow fruit; and a very nearly allied species, *P. Americana*, native of North America, has purple fruit.

ROWDY, ROWDYISH, etc.: see under Row 3.

ROWE, *rō*, Nicholas: 1674, June 30—1718, Dec. 6; b. at Little Barford, Bedfordshire: dramatic poet and translator, contemporary and friend of Congreve, Addison, Steele, and the other wits of the Queen Anne period. He was educated at Westminster, and studied law in the Middle Temple; but inheriting a small competency by the death of his father, he engaged in literature. 1700–14, he produced eight plays, of which three were long popular—*Tamerlane*, 1702; *The Fair Penitent*, 1703; and *Jane Shore*, 1714. The character of Lothario in the *Fair Penitent* was the prototype of Lovelace in Richardson's *Clarissa Harlowe*, and the name is still the synonym for an accomplished rake. R. translated Lucan's *Pharsalia*, and his translation was so highly valued, that after his death his widow received a pension expressly for this service to literature by her husband. He was also the first editor of Shakespeare, 1709. The popular talents and engaging manners of R. procured him many friends. The Duke of Queensberry made him his under-sec. of state. In 1715, he succeeded Tate as poet-laureate; and the same year was appointed one of the land-surveyors of the customs of the port of London; the Prince of Wales made him clerk of his council; and the Lord Chancellor Parker created him clerk of the presentations. He was buried in Westminster Abbey. As a dramatist, R. is characterized by easy and elegant diction and versification, but has no originality, subtlety, or force in delineation of character or passion. In the construction of his dramas, 'there is not,' as Johnson remarks, 'much art;' but there is no gross violation of taste or decorum, and he excels in scenes of domestic tenderness.

ROWEL, n. *row'ĕl* [F. *rouelle*—dim. of *roue*, a wheel, any small hoop or ring movable in the place which holds it: mid. L. *rotella*, a little wheel—from L. *rota*, a wheel: Venetian, *rodela*, the rowel of a spur]: the little star-like wheel of a spur; a little ring or wheel on a horse's bit; in *surg.*, a roll of hair, silk, or lint put into a wound to keep it open: V. to insert a little ring or wheel in. ROW'ELLING, imp. ROW'ELLED, pp. *-ĕld.*

ROWEN, n. *row'ĕn* [said to be a corruption of *roughings*]: the aftermath; a field left untilled till after Michaelmas, that the grain left on the ground may sprout and produce green herbage for cattle or sheep; the grass on it.

ROW'ING: The method of propelling a boat by the use of oars. It consists of two parts—the stroke, and the feather, which are executed by a series of very complicated motions designed to apply a maximum of available motive energy in pushing the boat through the water, and at the same time insure the least amount of deviation from a straight course.

In preparing to row, the oarsman sits on the thwart, facing the stern and exactly opposite the handle of his oar, the loom of which rests in the rowlock with the button on the inner side of the thole pin. To obtain the maximum effect from the power exerted, he should sit about two inches from the after edge of the thwart, the body being held square and upright, the back straight and rigid, the feet pressed firmly against the opposite stretcher or foot board with the heels close together and the toes apart, so as to keep the knees separate. The handle of the oar should be held firmly by both hands which should be about three inches apart, with the outside one close to the end of the handle, the fingers being above and the thumb underneath. The grasp should be a flexible hold with the fingers and not a clutch with the whole hand. The forearms should be kept below the level of the handle, with the elbows down, close to the sides of the body. The wrists should be relaxed and dropped, so that the oars will lie flat upon the surface of the water.

The stroke is characterized by three distinct phases —the beginning, the pulling through, and finishing, and the 'recovery' which includes the 'feather.' In taking the stroke, the body is inclined forward, the backbone being kept straight and rigid, the chest thrown forward and held up as high as possible, while the stomach is kept well out and down between the legs. The arms should reach out perfectly straight from the shoulders to the wrists, and the action of the shoulder joints and the hips should be perfectly free and easy. In reaching forward, the oar handle is grasped firmly by the fingers, and the hands are shot out quickly straight from the

body, and as soon as the oar has passed over the knees, the wrists are raised so as to bring the blade at right angles to the surface of the water and preparatory to dipping it, at the beginning of the stroke when the arms reach the extreme limit of their forward movement directly over the stretcher. At this instant, the hands are raised and the blade is dropped firmly into the water and buried until it is covered up to the shoulder. The stroke is pulled through by bracing the muscles of the back, loins, and shoulders, and by swinging the body backward, with the feet pressing hard against the stretcher, and the arms held perfectly rigid. The weight of the body is thus transferred from the seat to the stretcher and the handle of the oar, and when the body, in swinging backward, has reached a perpendicular position, the oar handle is pulled back home to the chest until the knuckles almost touch the bottom of the breast bone, by the action of the shoulders and a gradual bending of the elbow joints, while the forearms are kept as nearly as possible in a horizontal position.

At the finish of the stroke, the whole strength of the arms and shoulders is exerted, but care is taken not to use the biceps, which if exerted, would tend to raise the arms and consequently bury the blade. At this point, the body is not allowed to 'wait,' but is continued to swing back until it is overtaken by the hands. When the hands reach the breast bone, they are dropped quickly about two inches so as to lift the blade out of the water, then turned backward at the wrists until the knuckles touch the breast, so as to produce the 'feather,' in which the flat of the blade is made parallel with the surface of the water; then the arms are shot forward again close along the legs, accompanied by the forward swing of the body, in the 'recovery.' A quick recovery is effected by keeping the back straight and rigid, the knees not dropped too low, and by bracing the muscles of the body, and especially those of the stomach.

The operations of rowing from a fixed, or from a sliding seat, are very much the same. In the latter case, the stroke is taken by extending the arms to their full length, and swinging the body forward, simultaneously, with the assistance of the foot straps on the stretcher, the knees being kept slightly apart and the back straight. When the oar is dipped at the beginning of the stroke, the knees are straightened out gradually, and the body thrown backward, simultaneously, so that at the finish of the stroke, the legs are straight and the body and shoulders thrown well back. The recovery is effected by bringing the body to the upright position by the action of the hips, and then the motions described above are repeated in taking another stroke.

ROXBURGH, *rŏks'bŭr-rŭh:* county in Scotland, comprising the districts Teviotdale and Liddesdale, with part of Tweeddale; length about 40 m., breadth 28 to 30 m.; bounded e. and s. by Northumberland and Cumberland; s. w. by Dumfriesshire; w. by Selkirk; n. by Berwickshire; 670 sq. m., or 428,494 acres. The physical aspect of the county is varied and picturesque, having the Cheviot (highest point 2,382 ft.) and Lariston hills bounding a considerable portion of its borders. Hawick is noted for hosiery and woolen manufactures. The chief river is the Tweed, which flows through the n. districts of the county. The Teviot flows through the county 40 m. and falls into the Tweed at Kelso. There are several other streams of note, the Allan, the Slitrig, etc. R. has an interesting history in connection with border feuds of former days; and it has many magnificent remains of monastic life and institutions, with numerous legends and traditional stories. The proprietors are not numerous—the Dukes of Roxburghe and Buccleuch, the Marquis of Lothian, the Earl of Minto, and a few others holding a great proportion of it. To the eye of a traveller, R. is the county of Perth in miniature. The total acreage under all kinds of crops, bare fallow, and grass averages annually 181,600. The interior has generally a good soil, and many of the farms are large and are managed with great skill and intelligence. The county town is Jedburgh. Pop. (1901) 48,804.

ROX'BURGHE CLUB: literary society in Scotland, named from John, Duke of Roxburghe, collector of ancient literature. It originated in the interest caused by the sale of the duke's library at his death 1812, when the prices realized for some books were unprecedented; e. g., a copy of the first work printed by Caxton 1471, *Recuyell of the Historyes of Troye*, sold for £1,050, 10s. ($5,110.75); and a volume of the first ed. of Boccaccio's *Decameron* was bought by the Marquis of Blandford (afterward Duke of Marlborough) for £2,260 ($10,994.90), the greatest price till then ever paid for a single printed volume. The R. C. has printed, for its members only, many impressions of MSS., and many rare works—numbering about 80 in all. It may be regarded as the parent of many similar literary societies.

ROXBURGHIACEÆ, *rŏks-ber-ĭ-ā'sē-ē:* natural order of plants, belonging to the Dictyogens (q.v.) of Lindley, twining shrubs with reticulated leathery leaves and large, showy, solitary, fetid flowers; the perianth of four divisions, the stamens four, hypogynous, the ovary one-celled, the ovules numerous; the pericarp one-celled, 2-valved, with two clusters of seeds at the base; the seeds attached to long cords. The stems of

Roxburghia viridiflora, native of Chittagong, the Malayan Islands, etc., are sometimes 100 fathoms long. The roots are boiled and soaked in lime-water, to remove their acridity, and are then preserved in syrup, and eaten.

ROXBURGH-STYLE, n. *rŏks'bŭr-rŭh-stīl* [after John Ker, third Duke of Roxburghe, a noted bibliophile, because first employed in his library]: style of bookbinding consisting of a plain leather (generally morocco) back, with the lettering in gold high up, plain cloth or marbled paper sides, the top of the book gilt-edged, but the front edge and bottom of the book left white, and trimmed, not cut.

ROXBURY, *rŏks'bĕr-ĭ:* formerly a city in Suffolk co., Mass.; since 1867 constituting the 13th, 14th, and 15th wards of Boston; locally known as Boston Heights. It was settled 1630; was the birthplace of Gens. Warren and Heath of the revolutionary army; was the home of John Eliot, Thomas and Joseph Dudley, and Robert Williams; established a free school 1642; was occupied by the American army prior to Washington's investment of Boston; was chartered as a city 1846; was a terminus of the first street railroad (horse) in New England 1855; had a portion of its territory set off as W. Roxbury 1851, and the remainder was annexed to Boston 1867. In its present status as part of Boston, it is connected with the heart of the city by numerous street railroads; has more than 20 churches, several banks, a Rom. Cath. nunnery, and a number of institutions for reformation of wayward children and for Rom. Cath. orphans. It is lighted with gas and electricity; and has important industries, including brewing, milling, tanning, foundrying, watchmaking, beef-packing, rubber-making, and the manufacture of organs and locomotives. Now part of Greater Boston.

ROY, WILLIAM: major-general in the Brit. army: 1726, May 4—1790, July 1; b. Milton Head, the parish of Carluke, Lanarkshire, Scotland. He was the first of British geodesists. At the age of 20 he began the survey of the mainland of Scotland. In 1756 he was made lieut. in the army. R.'s most notable operation was measuring a base-line (see ORDNANCE SURVEY) on Hounslow Heath, of 27,404¾ ft., or about 5⅕ m., which, though the first measurement of the kind in Britain which pretended to accuracy, was executed with such care, that, on remeasurement after R.'s death, the difference between the two results was found to be only 2¾ inches. For this splendid labor, R. received the Royal Society's Copley medal. His elaborate work on the camps and other Roman remains in Scotland, illustrated by drawings, was pub. (1793) by the Soc. of Antiquaries. R. was surveyor-gen. of the coasts of Great Britain. His abilities as a milit. draughsman procured him high promotion.

ROYAL, a. *roy'al* [F. *royal;* OF. *real, roial,* royal or regal—from L. *rēgālis,* kingly—from *rex* or *rēgem,* a king]: becoming or like a king; pertaining to a king; kingly; majestic; illustrious; specially patronized by the sovereign, or in his service: N. a large kind of paper; in a *ship,* a small sail spread immediately above the top-gallant sail (see ROYAL-MAST); one of the shoots of a stag's head; a gold coin at one time current in England (see RIAL 2); in *artillery,* a small mortar. ROY'ALLY, ad. *-lĭ,* as becomes a king; regally. ROY'ALS, n. *-alz,* name given to the first regiment of foot in the British army, now called the Royal Scots; supposed to be the oldest regular troops in Europe. ROY'ALTY, n. *-tĭ,* the character, status, or office of a king; the person of a king or one of royal rank; share or portion due to a king or to a superior, or to an inventor for the use of his patent, or to a landowner for the privilege of working mines on his estate. ROYALTIES, n. plu. *roy'al-tĭz,* emblems of royalty; rights of a king. ROYALIZE, v. *roy'al-īz,* in *OE.,* to make royal. ROY'ALIZING, imp. ROY'ALIZED, pp. *-īzd.* ROY'ALIST, n. *-ĭst,* an adherent of the king; one attached to a kingly government. ROY'ALISM, n. *-ĭzm,* attachment to the principles or cause of royalty. ROYAL ACADEMY, in England, corporate body of 40 members founded 1768 for promotion of the fine arts; the public school of art, where the annual exhibitions of paintings by living artists are held. ROYAL ACADEMICIAN, a member of the Royal Academy. ROYAL ANTLER, the third branch of the horn of a deer. ROYAL ARCH, a degree in freemasonry. ROYAL ASSENT (see PARLIAMENT). ROYAL FERN, a large and handsome British species, the *Osmun'da rēgālis.* ROYAL OAK, an oak in Boscobel Wood in which Charles II. is said to have found concealment after the battle of Worcester. ROYAL SOCIETY, the oldest scientific society in London, incorporated by royal charter in 1662. ROYAL-YARD, the fourth yard from the deck, on which the royal is set (see ROYAL-MAST).—SYN. of 'royal': kingly; regal; princely; majestic; superb; imperial; monarchical; king-like; august; splendid; noble; illustrious.

ROYAL ARCANUM, THE: the name of one of the largest and strongest of the fraternal and beneficial societies in the United States. It was first organized 1877, June 23, at Boston, Mass., by Dr. Darius Wilson and John Andrew Cummings. The original council in Boston had but nine members. Other councils were soon established in the same city, and the order spread rapidly throughout the New England states. It has since grown at a rapid rate, and there are councils in every state and in almost every city and town in the Union. The business of the order is conducted in Boston, where the society owns a substantial building, in which the supreme council meets. The society is governed through councils which are dominated by the supreme council or governing body. The membership qualifications are good health and char-

acter; and the age limit is embraced in the ages between 21 and 55. Benefit certificates are issued for $1,500 and $3,000, payable at the death of a member. Should a member desire to increase his insurance over the limit fixed by the society he can do so by making application for the increase in the Loyal Additional Benefit Association, formed in 1889, practically within the Royal Arcanum, and incorporated in 1890 under the state laws of New Jersey.

The officers of the supreme council or governing body of the society consist of supreme regent, supreme vice-regent, supreme orator, sitting past supreme regent, supreme secretary, supreme treasurer, supreme auditor, supreme chaplain, supreme warden, supreme sentry, and legal adviser. The grand councils and subordinate councils have a similar roster of officers.

On Oct. 31, 1908, there were 240,850 members, 30 grand councils, and almost 2,000 subordinate councils. The emergency fund amounted to $4,731,833, since the foundation of the organization in 1877, the benefits paid amounted to $120,504,774.

The emblem of the association is a royal crown within a circle, on the circumference of which are 10 small Maltese crosses with the motto, 'Virtue, Mercy, and Charity.'

ROYAL GEORGE: British man-of-war, of 108 guns, which sank suddenly 1782, Aug. 29, in Portsmouth Harbor, England, with all on board. While undergoing repairs near the keel, she was too much heeled over, so that the water, rushing through the port-holes of the depressed side, speedily filled her, and she sank with all on board, including the admiral Kempenfeldt, the captain, officers, crew, and about 300 women and children, who happened to be on board at the time—1,100 in all; of these, however, 200 were saved. A small vessel, anchored near, was drawn into the vortex of the Royal George's descent, and swallowed up (see the elegy by Cowper). After unsuccessful attempts to raise the ship, the mass was blown to pieces by explosion of large metal cases filled with gunpowder, 1839. Most of the valuables which had gone down in the ship were brought up, and the brass guns recovered defrayed the cost of the operation.

ROYAL INSTITUTION OF GREAT BRITAIN: an institution founded in 1799 by Count Rumford, Sir Joseph Banks, and other men of science, and incorporated in 1800. It was reconstituted on a wider basis in 1810, and has for objects the promotion of scientific and literary research, the teaching of the principles of experimental science, the exhibition of the applications of these principles to the arts, and the affording of opportunities for study. Many distinguished chemists and physicists have conducted their researches in the laboratories. The library contains some 60,000 volumes.

ROYALL, *roy'ăl*, ISAAC: soldier: about 1720–81; b. Mass. For a long time he resided in Medford, which town he repeatedly represented in the legislature. He was a member of the executive council more than 20 years, and was the first native of New England to be appointed brig.gen., which title he received 1761 in the old French war. Though he was proscribed for his sympathy with England in the revolution, and his large estate was confiscated, he left funds to endow a law professorship in Harvard College. Royalston, Mass., was named in his honor. He died in England.

ROYAL MARRIAGE ACT, in Great Britain: Act 12 Geo. III. c. 2, enacting that no descendant of the body of George II., other than the issue of princesses married into foreign families, shall be capable of contracting marriage without previous consent of the sovereign, signified under the great seal; and any marriage contracted without such consent is declared void. But such descendants, if above the age of 25, may, after 12 months' notice to the privy council, contract marriage without consent of the crown, unless both houses of parliament shall, before expiration of the year, expressly declare their disapproval of such intended marriage. The Royal Marriage Act is heartily disapproved by many as impolitic and despotic, and as tending to immorality and scandalous conduct, and was not passed without great resistance in parliament.

ROYAL-MAST, in Shipping: fourth mast from the deck, and usually the highest carried. It is usually made in one piece with the top-gallant mast. It carries the royal-yard, which bears a sail called the 'royal.' The royal-mast is surmounted by the truck, at which the pendant or other flag is displayed when necessary.

ROYAL SOCIETY (OF EDINBURGH): society for investigation in every branch of science, erudition, and taste; incorporated by charter 1783. It owed its origin to Principal Robertson, the historian, who took as its model the Berlin Acad. The meetings are on the 1st and 3d Mondays of every month, Dec. to July. The papers read before this learned body are published in its *Transactions*, thus far more than 30 vols. quarto. Abstracts of the papers appear in its *Proceedings*.

ROYAL SOCIETY (OF LONDON): society for promotion of science, whose origin may be traced back to the years of civil strife that brought in the Commonwealth. In 1645 'divers worthy persons' met weekly in London to discuss 'natural philosophy and other parts of human learning.' Among these were some medical men; Dr. Wilkins, afterward bp. of Chester; Foster, prof. of astronomy in Gresham College; Wallis the mathematician, and others; and out of their meetings arose the now famous Royal Soc. Wallis records that the subjects discoursed of were 'the circulation of the blood; the valves in the veins; the venæ lacteæ; the lymphatic

vessels; the Copernican hypothesis; the nature of comets and new stars; the satellites of Jupiter; the oval shape of Saturn; the spots in the sun, and its turning on its own axis; the inequalities and selenography of the moon; the several phases of Venus and Mercury; the improvement of telescopes, and grinding of glasses for that purpose; the weight of air; the possibility or impossibility of vacuities, and nature's abhorrence thereof; the Torricellian experiment in quicksilver; the descent of heavy bodies, and the degrees of acceleration therein; and divers other things of like nature.'

In 1662 the philosophers were incorporated by charter from King Charles II., who subsequently granted two other charters conferring additional privileges. They are inscribed in the Charter Book, which, containing, as it does, the sign-manual of royal personages, and of nearly every fellow elected into the soc., presents a collection of autographs unequalled in the world. In 1664–5, March, they published the first number of *Philosophical Transactions*; and thus began a record of their labors and researches, and a history of science, of the highest value, comprising more than 170 quarto vols. Besides, the soc. publish an octavo serial, *Proceedings*, giving account of the ordinary meetings, beginning with 1800, and filling more than 30 vols. Another publication, in about ten quarto vols., is *Catalogue of Scientific Papers*, containing the titles of scientific papers published in all parts of the world since 1800—invaluable for reference. These works are sold to the public.

By increase of numbers—including scientific men on the continent, elected as foreign members—the soc. widened their sphere of usefulness. They promoted the publication of Newton's *Principia* and optical works; they lent instruments to Greenwich Observatory in its early days, and were appointed visitors of that establishment by Queen Anne—a function which they still exercise; they aided travellers and scientific investigators; through force of circumstances, they became the advisers of the govt. on scientific subjects; Cook's celebrated voyage to observe the transit of Venus was undertaken at their instance; and most of the great British scientific expeditions have been equipped under their advice. Since 1857 they have been domiciled in Burlington House. Their session commences on the 3d Thursday in Nov., and ends on the 3d Thursday in June. During this period, meetings are held weekly at 4:30 P.M. for reading and discussion of papers. At the anniversary meeting, Nov. 30, the soc. elect a council of 21 persons, including the officers, to carry on their work through the ensuing year. There are about 550 fellows, including 50 foreign members. There is a library of 30,000 vols. In fulfilment of trusts, the soc. award annually, in recognition of scientific work and discoveries, the Copley medal and two royal medals; the Rumford medal every two years for researches in light or heat; and the Davy medal for chemical investigations.

ROYAL UNIVERSITY OF IRELAND: an examining institution with its seat at Earlsfort Terrace, Dublin. It was founded in 1880. The corporation consists of a chancellor, a senate, and graduates, the government being vested in the chancellor and senators, the latter not to exceed 36 in number. It has power to confer all degrees and distinctions except in theology; these may be bestowed on all male and female students who have matriculated in the university and passed the prescribed examinations.

ROYCE, *rois*, JOSIAH, PH.D., LL.D.: American philosopher and educator: b. Grass Valley, Nevada co., Cal., 1855, Nov. 20. Graduated (1875) from the University of California, he studied also at Leipsic and Göttingen (1876) and the Johns Hopkins University (1877-8), and in 1878-82 was instructor in English in the University of California. From 1882 to 1885 he was instructor in philosophy at Harvard, in 1885 was appointed assistant professor, and in 1892 was elected to the professorship of the history of philosophy, which he still retains. His views are very similar to those of T. H. Green, the great English representative of the Neo-Kantian or Neo-Hegelian movement, and his position may be studied in the historico-critical work *The Spirit of Modern Philosophy* (1892). His clear, distinguished style as writer and lecturer has served to enhance his reputation in the United States, among whose leaders in philosophic inquiry he is highly ranked. Besides *California from the Conquest to the Vigilance Committee of 1856* (1886), and *The Feud of Oakfield Creek* (1887), a work of fiction, he has written: *A Primer of Logical Analysis* (1881); *The Religious Aspect of Philosophy* (1885); *The Conception of God* (1897); *Studies of Good and Evil* (1898); *The Conception of Immortality* (1900; Ingersoll lecture on immortality, 1899); *The World and the Individual* (1900-1; Gifford lectures, 1899-1900); *Outlines of Psychology* (1903); *Herbert Spencer: An Estimate and a Review* (1904); *The Relation of the Principles of Logic to the Foundations of Geometry in Transactions of the American Mathematical Society* (July, 1905); etc.

ROYCROFTERS, *roi'krŏf-tẽrz*, THE: the name applied to a colony of artisans and artists living at East Aurora, Erie co., N. Y. The founder of the Roycroft colony was Elbert Hubbard, who in 1893 established here a printing establishment and a monthly periodical called *The Philistine*. Hubbard, imbued with a socialistic doctrine similar to that of William Morris of England, gradually gathered about him numerous kindred spirits, and since 1900 the Roycrofters have been producing hand-made books, furniture, and wrought-iron work, and have established schools of music, painting, and sculpture. There are numerous workshops, a library, church, and other buildings at East Aurora, occupied by the Roycrofters, who have increased in number until the colony numbers several hundred.

ROYER-COLLARD, *rwâ-yā'ko-lâr'*, Pierre Paul: French statesman: 1763, June 21—1845, Sep. 2; b. at Sompuis (Marne). He was sent to college at Chaumont, and afterward at Saint-Omer, and passed as advocate at an early age. From the first days of the Revolution he was involved in the events of that time, having been elected one of the representatives of the Commune of Paris. 1790–92 he acted as joint-sec. of the municipality, when he was connected with Pétion and Danton. Finding it necessary at length to remove from Paris, he lived in obscurity in Sompuis during the whole time of the Reign of Terror. In 1797 the electors of his dept. chose him to represent them in the Council of the Five Hundred. R.-C. was one of those honest men who, preferring monarchy, but fearing a violent counter-revolution, consented to try the republic with a moderate government, hoping, meantime, for an ultimate restoration. The 18th Fructidor completely dispelled his illusions. Then turning to what he believed to be the only hope of France, he began a correspondence with Louis XVIII., which, however, ceased toward the epoch of the establishment of the Empire. For some years he refrained from politics. He accepted after much hesitation the chair of philosophy (1809) offered by Napoleon, in the new Univ. of France, and in this chair he exercised great influence on the philosophy of France. Rejecting the purely sensuous system of Condillac, he proceeded eclectically, giving special prominence to the principles of the Scottish school of Reid and Stewart. He originated the 'Doctrinaire' school, of which Jouffroy and Cousin were chief representatives.

At the restoration, the Bourbons did not overlook the man who had maintained their cause; but R.-C., who had all along dreamed of the union of hereditary monarchy with enlightened liberty, was ill fitted to act with the royalist fanatics who then became dominant in France.

R.-C. was appointed pres. of the Commission of Public Instruction 1815, which office he held, with the title Councilor of State, till 1820, when he resigned, not wishing to associate himself with the politics of the ministry. In 1815 the electors of Marne chose him to represent them in the famous 'Chambre Introuvable' (q.v.). He remained steadfastly attached to the king, but energetically opposing the *ultra* party. In the next parliament, he rejected, with energy, the idea of confiding public instruction to the clergy. Though R.-C. once more supported the govt. in a new discussion against the predominance of the Rom. Cath. Church, yet from 1819 his rupture with it was complete. He presented then the singular spectacle of a devoted royalist seconding the efforts of the liberals. In 1828 he became pres. of the chamber of representatives, and had to present the famous address of the 221 deputies (1830, Mar.), refusing their support to the govt., which the king refused to hear read. R.-C. was re-elected 1830, June; and in 1842 he withdrew from parliamentary life, and afterward lived

in retirement until his death at his estate of Châteauvieux.

Although R.-C. had a considerable fortune, he never departed from the greatest simplicity in living. He received with politeness, but with a certain coldness which he could never lay aside. His salon was frequented by the political world. Every Sunday, the principal leaders of the moderate opposition assembled there—Cousin, Guizot, the Duke de Broglie, Casimir Périer, De Barante, Villemain, Ampère, Andral, De Rémusat, De Barthélemy, Gabriel, and many others. R.-C. exercised on his contemporaries a powerful influence, more by his uprightness, firmness, and extreme earnestness, than by genius or original intellectual power. His chief work in philosophy was to import into France the philosophy of the Scotch school. See the biographies by Philippe (1857), and Barante (new ed. 1878).

ROYNE, v. *royn* [F. *rogner*, to pare]: in *OE.*, to gnaw.

ROYNISH, a. *royn'ĭsh* [F. *rogneux*, scabby, mangy; *rogne*, itch—from L. *robīgo* or *robīgĭnem*, rust]: in *OE.*, mangy; scabby; mean; paltry; rude; base.

ROYSTERING, ROYSTERER: another spelling of Roister, which see.

RSHEW, or Rjev, *rzhĕv:* town of European Russia, in the govt. of Tver, and 80 m. s.w. from Tver, on the Volga, which passes through it. It is a place of much commerce; has salt and corn magazines, and two great annual fairs. Pop. (1880) 18,732; (1885) 35,810.

RUATAN, *rô-â-tân'*, or Rattan, *rât-tân':* island in the Bay of Honduras, Caribbean Sea; lat. 16° 30′ n., long. 86° 30′ w.; 30 m. long by 9 broad in its widest part. Its dependencies are Bonacca, Utilla, Helena, Barbarette, and Morat: the whole comprise the colony of the Bay Islands; and were formerly part of the Brit. dominions, but were surrendered 1860 to the republican govt. of Honduras. The island has a fine climate, with prolific soil. Pop. (principally emigrants from the Caymans) estimated about 2,000 of whom about 200 are whites, including nearly 100 Spaniards.

RUB, v. *rŭb* [W. *rhwbio;* Gael. *rub*, to rub: Icel. *rubba*, to move a thing from its place, to rub: Sw. *rubba*, to disorder: Dan. *rubbe*, to rub or scrub]: to move one body along the surface of another with pressure; to clean; to scour; to remove by friction; to fret; to chafe: N. act of rubbing; friction; hindrance; difficulty; pinch; sarcasm; in *OE.*, inequality of ground that hinders the motion of a bowl. Rub'bing, imp.: N. act of scouring or polishing. Rubbed, pp. *rŭbd.* Rubber, n. *rŭb'bėr*, he who or that which rubs; difficulty; hardship; collision; a polishing substance of various kinds; a coarse file, or a whetstone; two games out of three in whist; a contest, consisting of three games; the game deciding the contest; the cushion of an electrical machine; India-rubber. Rubstone, a kind of sandstone used for

scouring. To RUB DOWN, to clean by rubbing, as a horse. To RUB OFF, to clean anything by rubbing. To RUB ON, to live with some difficulty. To RUB OUT, to erase; to obliterate. To RUB UP, to polish; to clean; to refresh, as knowledge.

RUBACE, n. *rô'bās,* or RUBASSE, n. *rô'băs* [F.—from L. *ruber,* red]: name given by French jewelers and lapidaries to a variety of rock-crystal with rose-colored cracks; cut and polished quartz slightly tinged with violet, and besprinkled internally with minute brown spangles of specular iron. An artificial rubace is made by heating very pure rock-crystal red-hot, and repeatedly plunging it into a colored liquid.

RUBAIYAT, *roo'bâi-yât:* a Persian word, the plural of *rubai,* signifying quatrain or epigram. Various forms of the *rubai* were borrowed from the Arabic, and one specific form was invented by Abul Khair of Mahna. It is this style of *rubai,* affording the most concise expression to views of religion and philosophy, that was developed by Omar Khayyam, a selection of whose quatrains, translated into English by Edward Fitzgerald, became so widely known as popularly to be called *The Rubaiyat.*

RUBATO, *rô-bâ'tō,* TEMPO [It., stolen time]: in music, capricious style of performance in which some notes are prolonged beyond their legitimate time, while others are curtailed, the aggregate value of the bar remaining unaltered. It is a style apt to be abused by inferior players and singers.

RUB'BER, INDIAN. See CAOUTCHOUC.

RUBBISH, n. *rŭb'bĭsh* [F. *rabâcher,* to repeat continually: Low Ger. *rabakken,* to rattle—the idea being a rattling, crashing, or falling down—same origin as *rubble*]: the mixed materials of ruined or crumbling buildings; waste fragments; any mingled mass; anything valueless; nonsense; confusion. RUB'BISHY, a. *-ĭ,* abounding in or having the nature of rubbish. *Note.*—In his remarks on the etymology of *rubbish,* Skeat compares It. *robaccia,* old goods, filth, rubbish; *robiccia,* trifles, trash —both being derived from O.It. *robba,* a gown, mantle, trash, pelf. See ROBE.

RUBBLE, n. *rŭb'bl* [Dut. *rabbelen;* Ger. *rappeln,* to rattle (see RUBBISH)]: name given by quarrymen to the upper fragmentary matter of rocks. In *masonry,* rubble is a coarse kind of work, in which the stones are irregular in size and shape. Walls faced with ashlar are generally packed with rubble at the back. Rubble is of various kinds, according to the amount of dressing given to the stones, and in some forms and situations is quite effective and picturesque. Common rubble is built with stones left almost as they come from the quarry. Hammer-dressed rubble is so called when the stones are squared with the mason's hammer; coursed rubble when the stones are squared and equal in height, etc. RUB'BLY, a. *-blĭ,* re-

sembling or abounding in rubble. RUBBLE-WORK, walls built of rubble-stones.

RUBEFACIENT, n. *rô'bĕ-fā'shĭ-ĕnt* [L. *ruber*, red; *facĭō*, I make]: that which produces redness and heat, when applied to the skin, without blistering: ADJ. making red.—A *Rubefacient* is an external agent employed in medicine for stimulating, and consequently reddening, the part to which it is applied. All agents which, after a certain period, act as blisters, may be made to act as rubefacients, if their time of action is shortened. The mildest are hot poultices, cloths soaked in very hot water, moderately stimulating liniments—e.g., soap-liniment, with various proportions of liniment of ammonia, or chloroform, etc. Spanish fly in the form of *Emplastrum Califaciens*, or warm plaster, in which the active ingredient is blunted by free admixture of soap-plaster, resin-plaster, etc., is a good form of this class of agents. Capsicum or Cayenne pepper, in the form of a poultice, is a good rubefacient much used in the W. Indies. Mustard in the form of *Cataplasma Sinapis*, or mustard poultice, and oil of turpentine, are perhaps the best of the ordinary rubefacients. The former is applied to the chest, with much advantage, in many cases of pulmonary and cardiac disease, and to the surface of the abdomen in various affections of the abdominal viscera. The best method of employing turpentine is to sprinkle it freely on three or four folds of clean flannel, wrung out of boiling water: the sprinkled surface of this pad is placed on the skin, and a warm dry towel is laid over the flannel. Two or three such applications will produce a powerful rubefacient effect.

RUBEL, n. *rô'bl.* See ROUBLE.

RUBELLITE, n. *rô'bĕl-īt* [L. *rubel'lus*, *ruber*, reddish; Gr. *lithos*, a stone]: red tourmaline, containing a considerable proportion of manganese, generally occurring in closely aggregated crystals, varying from a slight tinge of red to a fine pink. When transparent, it is valued as a gem.

RUBENS, *rô'bĕnz*, PETER PAUL: most eminent of Flemish painters, and one of the great painters of the world: 1577, June 29—1640, May 30; b. probably at Siegen, in Westphalia; son of John Rubens, a druggist. His parents had fled from Antwerp (where John Rubens was an alderman) in fear of death during the persecution by the Duke of Alva—for they had become upholders of the Reformation. They settled in Cologne 1568, Oct.; but for reasons discreditable to the father, he was in compulsory residence two years at Siegen. In 1587 Rubens' father died, and his mother removed with her family to Antwerp, where the boy studied in a Jesuit college, and later, as page to a lady of rank, acquired those graces of person and manner for which he was distinguished. Already Rubens was a good Latin scholar; and he soon added a knowledge of English,

French, German, Dutch, and Italian. He was placed first under Verhaagt, a landscape-painter; however, inclining more to historical painting, he became a pupil of Van Noort, but soon quitted his school for that of Otho Van Veen, or Vœnius, who then had very high reputation; and after studying four years with that esteemed painter, went to Italy 1600. Recommended to Vincenzo Gonzaga, Duke of Mantua, he was given a place in the duke's household, and was sent on a mission to Philip III. of Spain; and during a year at Madrid painted several portraits of Spanish noblemen. He also spent considerable time at Venice and Rome, making copies for the duke, and executing independent works, which added largely to his reputation. In 1608 Rubens returned to Antwerp on account of his mother's illness; but she died before he had reached her. His stay with the Duke of Mantua, who was princely in his encouragement of art, was an important element in the formation of his style. He intended to return to Mantua, but was induced to remain by the Archduke Albert, governor of the Netherlands. In Antwerp Rubens married Isabella Brant, 1609, Oct. In 1621 he visited Paris by invitation of Marie de' Medici; and 1625 completed the series of sketches for the pictures destined to adorn the palace of the Luxembourg. At this period he had gained a renown equalled by no painter then in Europe. Rubens was sent by the Infanta Isabella, widow of the Archduke Albert, on a diplomatic mission to Philip IV. of Spain, 1628; and in the following year, on a similar mission to Charles I. of England, by whom he was knighted 1630: also Cambridge University gave him the degree A.M. Rubens' success as a political diplomatist is worth noting, and seems to indicate an unusually large, solid, and practical nature. In 1630, having been four years a widower, he married Helena Fourment, a beautiful girl of 16 years. Rubens, having been long the acknowledged head of the Flemish school of art, died leaving a very large estate.—By the expression of powerful and energetic action, and strongly marked character—by great breadth and brilliant coloring, Rubens successfully embodied the tendencies of the age in which he lived, to pleasures of sense, strong passion, and stirring action; and while admitting the coarseness, and almost grossness, of his subjects, especially where the nude figure is introduced, we are in a manner carried away by the spirit of joyousness and an animal vigor conspicuous in his works, and the truthful manner in which he viewed nature. His portraits rank with the highest efforts in that walk of art. He painted animals admirably; and his landscapes possess great brilliancy and natural effect. He was perhaps the greatest master in the mechanical part of the art. His style has had much influence on the English school.—Rubens believed that painters could do most justice to their art in pictures on a large scale. Such are his 24 paintings illustrating the life of Marie de' Medici, now in the Louvre;

RUBENS.

these, in the manner of his time, include many allegorical figures, such as the Fates; the Graces; the Greek gods and goddesses; and personations of Justice, Fidelity, Plenty, etc. Of his work in religious art, the *Assumption of the Virgin* is a notable example; it still adorns the high altar of the Antwerp cathedral, for which it was designed, and represents the Virgin ascending in a flood of glory. The *Massacre of the Innocents*, in the Munich gallery, repulsive to many on account of its subject, is vigorously true to its revolting theme. His portraits include many of the royal personages of his time, and more than 20 of his beautiful second wife; who appears also in twice that number of compositions, such as the *Feast of Venus*, now in the Vienna gallery, and the *Judgment of Paris*, at Madrid. In the last-mentioned work, and the *Martyrdom of St. Peter* (now at Cologne) and the *Martyrdom of St. Thomas* (at Prague), his latest productions, he was still in the exercise of his best powers. The Flemish school, of which he was the master, restored to glowing life and nature, though with much absence of refinement, the frigid stiffness of the Italian school. 'His pure fancy subjects, as the *Garden of Love* (Madrid and Dresden) and the *Village Feast* (Louvre), have never been equalled.' To the more refined Van Dyck he led the way, and for a century shaped the Flemish school. Winckelmann, historian of art, says that 'Rubens is the glory of art, of his school, of his country, and of all coming centuries.' J. Smith's *Catalogue* describes more than 1,300 of his compositions. The Madrid gallery possesses a hundred, and many are found in the principal cities of Europe. The tercentenary of Rubens' birth was celebrated at Antwerp 1877 with great enthusiasm. See Kett's *Rubens* (Lond. 1879).

RUBEOLA, n. *rô-bē'ŏ-la* [L. *ruber*, red]: term often used for measles, but now restricted to an eruptive disease which presents the characters of both measles and scarlet fever, but which is distinct from either, called more commonly German measles (q.v.). RUBELOID, a. *rô'bĕ-loyd* [Gr. *eidos*, resemblance]: resembling the eruptive disease rubeola. See MEASLES.

RUBESCENT, a. *rô-bĕs'sĕnt* [L. *rubes'cens* or *rubescen'tem*, becoming red; *rubes'co*, I become red—from *ruber*, red]: becoming red; tending to a red color.

RUBIACEÆ, *rô-bĭ-ā'sē-ē:* natural order of exogenous plants, in which, according to many botanists, the *Cinchonaceæ* are included as a sub-order; but which, as restricted by others (*Stellatæ* of Ray, *Galiaceæ* of Lindley), consists entirely of herbaceous plants, with whorled leaves, angular stems, and numerous very small flowers; calyx superior, with 4, 5, or 6 lobes, or almost lacking; corolla wheel-shaped or tubular, regular, inserted into the calyx, and with the same number of divisions as the calyx; stamens equal in number with the lobes of the corolla; two styles; fruit a dry pericarp with two cells, and one seed in each cell. There are 300-400 known

species, abounding chiefly in n. parts of the n. hemisphere, and on mountains in tropical regions. The most important plant of the order, as above restricted, is Madder (q.v.). To this order belong also Bedstraw (q.v.) and Woodruff (q.v.); also, if the family *Cinchonaceæ* be included, the Peruvian Bark tree; the showy Button-bush of our fields; the Georgia Bark, Coffee-tree, Cape Jasmine, Bouvardia, the common Bluets (*Houstonia*), etc.

RUBIACIN, n. *rô-bī′a-sĭn* [L. *ruber*, red]: an orange colored pigment obtained from madder, *Rubĭa tinctōrum*.

RUBIAN, n. *rô′bĭ-an* [L. *ruber*, red]: a bitter principle of madder.

RUBICAN, a. *rô′bĭ-kan* [F. *rubican*—from L. *rubērĕ*, to grow red; *ruber*, red]: of a bay, sorrel, or black color, with a light-gray or white on the flanks, but the gray or white not predominant there.

RUBICELLE, n. *rô′bĭ-sĕl* [F. *rubicelle*—from L. *ruber*, red]: a gem, a variety of ruby, of a yellow or orange red.

RUBICON, *rô′bĭ-kon* or *rū′bĭ-kon:* small stream of central Italy, falling into the Adriatic; with a proverbial celebrity from the well-known story of its passage by Julius Cæsar, who by crossing this river—which, at the outbreak of the civil war between him and Pompey, formed the s. boundary of his province—virtually declared war against the Republic. Hence the phrase, 'to cross the Rubicon,' has come to mean to take an irrevocable step, committing one's self to a difficult, momentous, and hazardous enterprise. The modern Luso, called by the peasants on its banks *Il Rubicone*, has claims to being the ancient R.; but arguments preponderate in favor of the *Fiumicino*.

RUBICUND, a. *rô′bĭ-kŭnd* [L. *rubĭcun′dus*, red—from *ruber*, red: It. *rubicondo:* F. *rubicond*]: inclining to redness; ruddy. Ru′BICUNDLY, ad. *-lĭ*. Ru′BICUND′ITY, n. *-ĭ-tĭ*, inclination to redness; ruddiness.

RUBIDIUM, n. *rô-bĭd′ĭŭm* [L. *rubĭdus*, dark red—from *rubĕō*, I am red; *ruber*, red]: elementary body, a metal analogous to potassium, with such intense affinity for oxygen that it burns spontaneously in contact with either air or water. Rubidium (sym. Rb, at. wt. 85·4) and Cæsium, *sē′zĭ-ŭm* (sym. Cs, at. wt. 133), are two alkaline metals, discovered 1860–1, by Bunsen and Kirchhoff, by means of spectrum analysis. They resemble potassium more nearly than any other substance, and their names [from *rubidus*, dark red, and *cæsius*, sky-colored] are from two red lines of remarkably low refrangibility present in the spectrum of the former, and two characteristic blue lines in that of the latter. They are widely diffused in nature, but occur only in very small quantities. They have been detected in many mineral waters, and in certain minerals; e.g., lithia-mica, lepidolite, petolite, and felspar; and they have been found in the alkaline ashes of the beet-root. The best material

for the preparation of rubidium is lepidolite, which will sometimes yield as much as 0·2 per cent. of the metal. For some time the principal source of cæsium was the brine of Dürkheim, in which both these metals were originally found; every ton of the water containing about three grains of chloride of cæsium, and rather less than four grains of chloride of rubidium. It is now ascertained that the mineral Pollux, found only on the island of Elba, contains no less than 34·01 per cent. of oxide of cæsium. Both metals are so analogous to potassium that they cannot be distinguished either from it or from one another by reagents, or before the blowpipe. Like potassium, they form double salts with bichloride of platinum, which are much more insoluble than the corresponding potassium salt; and it is on this property that the separation of these metals from potassium is based. Rubidium is electro-positive toward potassium, and cæsium is electro-positive toward rubidium and potassium, being thus the most electro-positive of the known elements.

INDIUM is another metal, very rare, discovered by Reich and Richter in the Freiberg arsenical ores. Its most striking property, and that which led to its discovery, is the indigo-blue line which all its compounds (so far as investigated) show in the spectroscope. Its at. wt. is 113·4; its sp. gr. varies from 7·1 to 7·3; its color is between those of tin and silver; it is exceedingly soft and very ductile; its fusing-point is about that of lead.

RUBIED, RUBIFORM, RUBIOUS: see under RUBY.

RUBIGINOUS, a. *rô-bĭj′ĭ-nŭs*, or RUBIG′INOSE, a. *-ĭ-nōs* [L. *rubigĭnōsus*, abounding in rust—from *rubīgo* or *rubīginem*, rust, mildew]: in *bot.*, of a brownish-red tint; red, with much gray; having the color of rust.

RUBINI, *rô-bē′nē*, GIOVANNI BATTISTA: singer: 1795–1854, Mar. 2; b. Italy. In his boyhood he showed no talent for singing, but after years of close study he made a successful appearance at Brescia 1815. Ten years later he appeared in Paris, and soon became the leading tenor singer of his day. He sang in the large cities of Europe 1831–46, retiring in the latter year with a large fortune. His voice was of remarkable compass and wonderful sweetness. As an actor he had very little ability.

RUBINSTEIN, *rô′bĭn-stīn*, ANTON GREGOR: pianist and composer: b. Wechwotynetz, Roumania, 1829, Nov. 18. He received his preliminary musical education from his mother; made his first public appearance in piano concert when 8 years old; continued his studies in Moscow, Paris, and Berlin; and after teaching in Berlin and Vienna, settled in St. Petersburg 1848, and founded a conservatory of music 1850. He became pianist to the Grand-Duchess Helena and director of the concerts of the Russian musical Soc. After 1867 he spent his time trav-

elling, playing, and composing. He visited the United States 1872–3; and resigned the directorship of the St. Petersburg conservatory of music 1890. He was ennobled 1869, awarded the French decoration of the Legion of Honor 1877, and was given a jubilee fête in St. Petersburg 1889. He published *Autobiography of Anton Rubinstein* · 1829–1889 (1890). He d. 1894, Nov. 20.

RUBLE, n. *rô'bl*: see ROUBLE.

RUBRIC, n. *rô'brĭk* [F. *rubrique*, chalk, rubric—from L. *rubrīcă*, red chalk, the title of a law so named from being written in red—from *ruber*, red]: the directions printed in prayer-books, which were formerly in red letters; in *anc. canon-law books*, title or heading of a chapter, printed in red letters; the rule of law; the authoritative direction; an explanation or direction. RU'BRICS, n. plu. directions; in mediæval and modern use, restricted to directions in the service-books of the church, as to the ordering of the several prayers, and performance of the ceremonial. The same name, with the usage itself, is retained in the Church of England and in the Prot. Episc. prayer-books; the name being retained even where the direction is not printed in red ink, in which case the rubric is distinguished from the text by italics, or other variety of print. In the Rom. Cath. Church, a controversy exists as to whether the rubrics of the missal, the ritual, and the breviary are preceptive, or only directive. A similar controversy has arisen at various times in the English Church. The science of rubrics is with Rom. Catholics a special study, the chief authorities on which are Gavanti, Merati, Cavalieri, and more compendious writers. RU'BRICAL, a. *-brĭ-kal*, pertaining to a rubric. RU'BRICAIRE, n. *-kār*, or RU'BRICIST, n. *-sĭst*, one versed in ancient rubrics. RU'BRICATE, a. *-kāt*, marked with red: V. to mark or distinguish with red. RU'BRICATING, imp. RU'BRICATED, pp.

RUBRUQUIS, *rü-brü-kēs'* (usual name for WILLIAM OF RUBRUK): distinguished mediæval traveller: b. in the first half of the 13th c., prob. in the village of Rubrouck, in what is now the French. dept. Nord (q.v.). He entered, while very young, into the Franciscan order, and being hindered in his favorite scheme of missionary labor in the Holy Land, and going instead to central Asia, he was made by Louis IX. of France bearer of proposals for an alliance with Sartak, son of Batû Khan of Kiptchak, a supposed Christian sovereign, against the infidels who held the Holy Land. Taking Constantinople as the starting-point, R., with two companions, also Franciscans, sailed for Soldaia—now Soujac—near Cherson, made his way across the steppes between the Dnieper and the Don, and crossing, the latter river, reached, 1253, Aug. 2, the camp of Sartak, who was now discovered not to be a Christian, and by whom they were sent forward to his father, Batû. When they reached the encampment of Batû, on the

Volga, near its mouth, that prince refused to treat with them, and sent them forward to the Tartar emperor, Mangû Khan, whom they reached Dec. 27. At this rude court they remained several months, and accompanied it about Easter to Karakorum, where they found a few Europeans. Some time afterward, R., being charged with having spoken of the emperor as an infidel, though he defended himself courageously, was compelled to return, but was treated with a degree of rude consideration. Proceeding along the banks of the Volga, he penetrated the difficult defiles of the Caucasus, proceeded through Armenia, Persia, and Asia Minor, to Syria, arriving at Tripoli 1255, Aug., having spent two years and a half in his eastern travel. As King Louis, by whom the mission had been accredited, had meanwhile returned to France, R. requested permission to follow him, to report the result; but the Franciscan provincial refused to permit him to leave the East, and directed him to report in writing. To this fortunate severity we owe the interesting and curious account which he drew up and of which a lucid summary is in Lardner's Cyclopædia, *Inland and Maritime Discovery*, I., 261, and following. Of the later history of R., the only fact known is, that he was living 1293, when Marco Polo was returning from the East. His narrative is among the most plain and sober in its tone of all that have come down to us from the adventurous voyagers of the 13 c. He was evidently honest and sagacious; and is generally accepted by scholars as trustworthy.

RUBUS, *rô'bŭs:* genus of plants of nat. order *Rosaceæ*, distinguished by a 5-lobed calyx without bracts, and the fruit formed by aggregation of small drupes adhering to each other on a long *torus*. The fruit is eatable in all, or almost all, the species, which are very numerous, and natives chiefly of the colder parts of the n. hemisphere, though some are natives of warm climates, and are seen occasionally in our hothouses. Some of them are herbs with perennial roots, some are shrubs with sub-ligneous—often only biennial—stems, and they have digitate, pinnate, or lobed leaves. They cause great difficulty to botanists, the varieties being extremely numerous, and the specific distinctions very uncertain. The RASPBERRY (q.v.) and BLACKBERRY (q.v.)are well-known fruits. The DEWBERRY (q.v.) and FLOWERING BRAMBLE or Brier Rose also belong to this genus. Besides these, and the species most nearly resembling them, and which have been described with them, notice may be taken of *R. spectabilis*, a shrubby species, with leaves of three leaflets, and fine large dark-purple fragrant flowers, produced singly on long terminal flower-stalks; native of the banks of the Columbia river. The fruit is about the size of a raspberry, dark yellow, acid, and somewhat astringent, making excellent tarts.—*R. saxatilis*, called sometimes the *Stone Bramble*, is a perennial herbaceous plant, with slender stem, leaves of three leaflets, small greenish-yellow flowers, and pleasant fruit of very few

rather large drupes. It is a native of stony places, in mountainous parts of Britain.—*Ruby arcticus* is a small herbaceous plant with creeping roots, slender stems 2-6 inches high, each with three or four leaves, which have three leaflets; the flowers large and of deep rose color, and a purplish-red fruit of exquisite flavor. This interesting plant is abundant in Norway and Sweden, Siberia, and other arctic countries. In Siberia, it is known by a name signifying *Prince-berry.* A syrup, a jelly, and a wine are made of it. The fruit is highly esteemed.

RUBY, n. *rô'bĭ* [F. *rubis;* Sp. *rubi,* the ruby—from L. *ruber,* red: It. *rubino*]: precious stone, varying in color between a bright carmine and crimson: redness; anything red: a blotch; a carbuncle: among *printers,* a letter of a small size: ADJ. of the color of the ruby; red: V. to make red. RU'BYING, imp. RU'BIED, pp. *-bĭd:* ADJ. red as a ruby. RU'BIFORM, a. *-fawrm* [L. *forma*]: having the character of redness, or approaching to it. RU'BIOUS, a. *-bĭ-ŭs,* in *OE.,* ruddy; red.—The ruby is a rich red, transparent variety of corundum. The name is sometimes used for other red gems (see RUBY SPINEL), and improperly for richly colored garnets, of the variety pyrope. The stones called Cape rubies and Arizona rubies are only fine pyropes, coming respectively from the South African diamond mines and from Arizona and New Mexico. Siberian ruby is a term sometimes applied to gems of rubellite or red tourmaline, and Brazilian ruby to the deeper shades of pink topaz, altered to that color by heat. The true rubies recently mined in the Cowee valley, in North Carolina, have attracted much interest, being in some cases as fine as those from Burma; but they are mostly small, and it is not certain whether they will prove of real importance. They occur in a greatly decomposed igneous rock, in the same manner as the very similar crystals of sapphire from Yogo Gulch, Montana. The rubies of Burma, formerly soken of as Pegu, are derived from a crystalline limestone. In these cases, and indeed generally, the gems are largely found in gravels and surface deposits formed from the decomposition of the parent rocks. Like all the deeply-colored corundum gems, rubies are strongly dichroic, their color varying with the direction in which light traverses the crystal, whether transverse or parallel to the axis of the prism. The presence of microscopic cavities or of included crystals of extreme minuteness, disposed in a certain parallelism to the crystalline axes, produces the optical effect known as asterism, which is exhibited by the highly prized gems called star rubies (and star sapphires). In less amount or when irregularly distributed, the same causes produce defects known as 'silk,' and cloudiness. Many efforts have been made to produce the ruby by chemical means, and a dozen or more processes have been devised with greater or less success within the past 50 years, but with little practical result. Crystals

have been obtained, of fine color, but mostly small, or in flat hexagonal plates too thin to furnish gems. Some years ago, larger pieces appeared in the market, that caused some concern from their close resemblance to natural rubies. The process was not made known, but was judged to be that discovered by Frémy and Feil, by fusing an aluminate of lead with silica. They were detectable by the microscope, which showed that they contained minute cavities that were rounded and bubble-like, while those in real rubies are angular and crystalline. The French 'Syndicate of Diamonds and Precious Stones' decided that all such rubies must be sold as 'artificial,' under penalty of fraud.

RUBY MATRIX: a name recently given to a beautiful combination of red or pink corundum with a bright green variety of hornblende (amphibilite) found at the Cullakenee corundum mine in Clay co., North Carolina; it has been proposed to use it as an ornamental stone, though the ruby-corundum is not transparent enough to cut gems.

RUBY SPINEL: this mineral is an aluminate of magnesia. It crystallizes in octahedrons, with a hardness of 8, and a specific gravity of 3.5 to 3.7, usually of some shade of red, sometimes very rich, and transparent to translucent. Fine specimens make beautiful gems, known as spinel rubies, not readily distinguishable from true (corundum) rubies, though less hard, less dense, and less valuable. The historic 'Black Prince' ruby, in the crown jewels of England, is believed to be a spinel. True rubies may also be distinguished from spinels by the dichroism which belongs to all the deeply colored corundum gems. Red spinel has several other varieties, with special names; it is called Balas ruby when the color is rich pink, rubicelle when it inclines toward an orange red, and almandine ruby when it tends toward a purplish. Spinel is a frequent associate of the true ruby, in Burma, Siam, Ceylon, etc. It usually occurs in crystalline limestones, though occasionally found in other metamorphic, and even in volcanic, rocks.

RUCHE, n. *rôsh*, or RUCHEING, or RUCHING, n. *rôsh'ĭng* [F. *ruche*, a bee-hive, from the quillings resembling honeycombs]: quilled or gauffered net, lace, silk, and the like, used as trimming for ladies' dresses and bonnets.

RUCK, n. *rŭk* [Icel. *hrucka*, to wrinkle: Dut. *kreuk*, a wrinkle: Norw. *rukka*, a crease]: a crease or wrinkle in cloth: V. to crease, as linen. RUCK'ING, imp. RUCKED, pp. *rŭkt*. RUCKLE, v. *rŭk'l*, to rumple into wrinkles.

RUCK, v. *rŭk* [Gael. *ròc*, to croak: Dan. *skrukke*, to cluck]: in *OE.*, to squat or cower down as a hen over her chickens; to sit close. RUCK'ING, imp. RUCKED, pp. *rŭkt*. RUCKING HEN, a brooding hen which clucks.

RUCK, n. *rŭk* [see RICK]: a heap, as of stones; a disorderly mass; the herd or multitude that have no inde-

pendent opinions; the fag-end. RUCKLE, n. *rŭk'l*, a loose heap; a confused mass.

RÜCKERT, *rük'kĕrt*, FRIEDRICH: German lyric poet: 1788, May 6—1866, Jan. 31; b. at Schweinfurt. He studied at the gymnasium of his native town, and at Jena University. In 1826 he was nominated professor of oriental languages at Erlangen; went 1840 to Berlin, as professor and privy councilor, but resigned 1849, and lived on his estate of Neuses in Coburg. Ruckert began his literary career under the pseudonym Freimund Raimar with his *Deutsche Gedichte* (German Poems, Heidelb. 1814), and *Napoleon, eine politische Komödie in drei Stücken* (Napoleon, a Political Comedy in Three Parts, Stuttg. 1816). Under his own name he published: *Kranz der Zeit* (A Wreath of the Time, Stuttg. 1817); *Oestliche Rosen* (Eastern Roses, Leip. 1822); *Gesammelte Gedichte* (Collected Poems, 6 vols. Erl. 1834-38). Fruits of his oriental studies are his numerous translations, and several of his many original poems. He published also four dramas: *Saul und David* (Erl. 1843); *Herodes der Grosse* (2 vols. Stuttg. 1844); *Kaiser Heinrich IV.* (2 vols. Frank. 1845); *Cristoforo Colombo* (2 vols. Frank. 1845). —Ruckert was one of the most learned, versatile, and sprightly lyrists of modern times. He tried all sorts of meters, the Greek hendecasyllabic, the old Norse alliterative verse, the old German couplet, the *Nibelungen* strophe, the popular ballad, the delicate yet stately measure of the eastern gazelle (sonnets), and every kind of European quatrains, distiches, etc.; and he succeeded in all. Perhaps his fancy and wit were more remarkable than his depth of lyric feeling, yet the simple pathos of such pieces as the *Aus der Jugendzeit* could hardly be surpassed. His original poems relating to the East are: *Morgenländische Sagen und Geschichten* (1837); *Rostem und Suhrab: eine Heldengeschichte* (1838); and *Die Weisheit des Brahmanen* (1836-9). His adaptations include *Die Verwandlungen des Abu Seid* of Hariri (1826); *Nal und Damajanti* from the *Mahabahrata* (1828); *Amrilkais* (1843); and *Hamasa* (1846). Among his other works are: *Liebesfrühling* (1844); and *Lieder und Sprüche* (1866).

RUCKSTUHL, *rŭk'stôl*, FREDERIC WELLINGTON: American sculptor: b. Breitenbach, Alsace, 1853, May 22. His art studies were begun in 1883 in Paris. His first exhibit, a life size nude figure called *Evening* won honorable mention in the Salon of 1888. His principal works are: a bronze figure *Victory*, on the soldiers' and sailors' monument at Jamaica, Long Island; the bronze *Solon*, in the Library of Congress, Washington, D. C.; and the heads of Goethe, Franklin and Macaulay, which form a part of the façade; and the heroic marbles *Wisdom* and *Force* above the Appellate Court building, New York.

RUDD, n. *rŭd* [W. *rhudd*, crimson: AS. *rudu*, redness]: river-fish of reddish-golden hue, and with red eyes—named also RED-EYE (q.v.).

RUDDER, n. *rŭd'dėr* [original Eng. word]: in a ship or boat, that part of the steering apparatus which is in

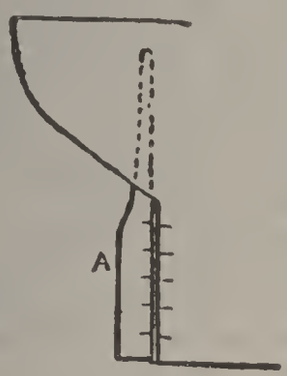


Fig. 1.

Fig 2.
A, brace; B, pintle.

immediate contact with the water. It is shaped as at A (fig. 1), hung to the stern-post by pintle and brace hinges (fig. 2), and the upper end passing into the vessel is acted on by the tiller. So long as the rudder, AB (fig. 3), is in a straight line with the keel, the water which the vessel leaves behind acts equally on both sides, producing equilibrium; but if the rudder be turned, as AB′, it will be relieved from the pressure on the side DC, while that on the side DE will act with greater force, and cause the ship to revolve round the centre of gravity, G. When the head has turned sufficiently, as to D′, the rudder is again put in line with the keel: see HELM. RUDDERLESS, a. without a rudder.

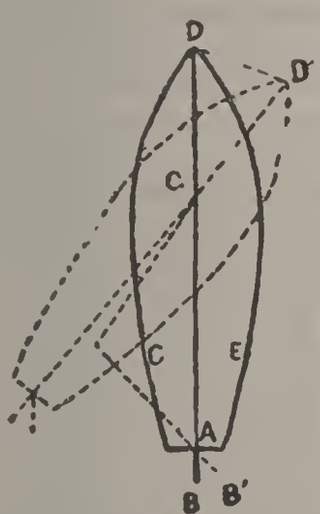


Fig. 3.

RUD'DER-FISH: fishes of the Rudder-fish family, *Stromateidæ*; especially, as bearing the name, the Black R.-F. (*Lirus perciformis*), called also Log-fish, and Barrel-fish, because usually found near floating spars and casks, as well as near rudders and under boats. It attains a length of 10–12 in., undergoes considerable change of color from time to time, and is of excellent flavor. Its probable range is from Halifax to Cape Hatteras. The Banded R.-F. (*Seriola zonata*) is of the Amber-fish family, 6–8 in. long, of beautiful colors, good flavor, and named from its resemblance to the Pilot-fish (*Naucrates ductor*), which also is called R.-F., and has the singular habit of keeping company with large fish, especially sharks, and also with ships, which it sometimes follows into our harbors.

RUDDILY, RUDDINESS: see under RUDDY.

RUDDIMAN, *rŭd′dĭ-măn*, THOMAS: greatest of Scottish grammarians: 1674, Oct.—1757, Jan. 19; b. Raggal, Banffshire, Scotland. He received the rudiments of classical education at the parish school; and at 16 years of age went to King's College, Aberdeen, where he took his degree M.A. four years later. On leaving the univ. he became tutor in a private family, and afterward parish schoolmaster of Laurencekirk. Through the influence of the physician and Latinist Dr. Archibald Pitcairne, R. was appointed assistant-keeper of the Advocates' Library, Edinburgh; but the remuneration was so small, that 1707 he began business as an auctioneer. He then began his career as an editor; and in 1714 appeared his well-known work, *Rudiments of the Latin Tongue*, a text-book from which, under variety of forms, his countrymen are still initiated into classical literature. In 1715 he published his great ed. of Buchanan's works (2 vols. folio); and in that year exchanged the calling of an auctioneer for the more congenial one of printer, having his brother as partner. In 1725 he published the first part of his great grammatical work, *Grammaticæ Latinæ Institutiones*, treating of the Etymology of the language; and 1732 the second part, which treats of the Syntax. His philological reputation rests mainly on this work, re-edited in Germany by Stallbaum, and repeatedly referred to in the Latin Lexicon of Freund. He was next made principal keeper of the Advocates' Library. While in this post, he completed (with appendices and learned Latin introduction) Anderson's magnificient *Diplomata et Numismata Scotiæ* (folio 1739). He pub. 1751 an ed. of Livy 4 vols. 12 mo, a gem of typography, still known as the 'immaculate' edition, from its entire exemption from errors of the press. R. died in Edinburgh in his 83rd year. In politics, he was an ardent tory and Jacobite; in private life, most upright and estimable. He founded the *Caledonian Mercury* newspaper, and pub. or edited a multitude of minor tracts and books. See his life by Chalmers (1794).

RUDDLE, n. *rŭd′dl* [W. *rhuddell*, ruddle: AS. *rudu*, redness]: a species of red earth; red chalk; red ochre: V. to mark with ruddle, as sheep. RUD′DLING, imp. RUD′DLED, pp. *-dld*. Same as REDDLE and RADDLE, which see.

RUDDOCK, n. *rŭd′dŭk* [AS. *rudduc*; W. *rhuddog*, a ruddock—from *rhudd*, crimson]: the robin-redbreast.

RUDDY, a. *rŭd′dĭ* [Low Ger. *rood*; W. *rhudd*; AS. *rudu*, redness—akin to Gr. *rhodon*, a rose: Gael. *ruadh*, red]: tinged with red; of the color of the human skin in high health. RUD′DILY, ad. *-dĭ-lĭ*. RUD′DINESS, n. *-nĕs*, a lively flesh color; that redness of the face which indicates perfect health.

RUDE, a. *rôd* [F. *rude*—from L. *rudis*, rough, raw, wild: It. *rude*]: unformed by art; such as may be done

by strength without the aid of art; shapeless; untaught; rough; inelegant; coarse in manners or behavior; impertinent; not polished or refined; boisterous; harsh; inclement. RUDE'LY, ad. *-lĭ*, unskilfully; coarsely; uncivilly; violently; fiercely. RUDE'NESS, n. *-nĕs*, the state of being rude; coarseness of manners; incivility; unskilfulness; inelegance; violence; impetuosity.—SYN. of 'rude': rough; coarse; uncivil; impolite; brutal; violent; tumultuous; boisterous; turbulent; inclement; harsh; untaught; raw; ignorant; rugged; uneven; shapeless; unformed; inelegant; impertinent; unfashioned; artless; unpolished; uncouth; rustic; vulgar; clownish; unskilful; illiterate; saucy; impudent; insolent; surly; currish; churlish; uncivilized; barbarous; savage; fierce; impetuous; severe.

RUDENTURE, n. *rô-dĕn'tūr* [F. *rudenture*, rudenture—from L. *rudens* or *ruden'tem*, a rope or line]: in *arch.*, the figure of a rope or staff with which the flutings of columns are sometimes filled—usually one-third of the height; called also *cabling*. It is sometimes plain, sometimes ornamental.

RUDESBY, n. *rôdz'bĭ* [*rude*, and *boy*]: in *OE.*, an uncivil, turbulent fellow.

RÜDESHEIM, *rü'dĕs-hīm:* small town on the right bank of the Rhine, Prussian province of Hesse-Nassau, opposite Bingen. Near Rudesheim is grown one of the most esteemed of the Rhine-wines (q.v.), *Rüdesheimer*. Here stands the great German national monument of Germania, inaugurated 1883. Pop. 3,600.

RUDIMENT, n. *rô'dĭ-mĕnt* [F. *rudiment*—from L. *rudimen'tum*, a first attempt or trial—from *rudis*, unformed, unused: It. *rudimento*]: a first principle or element; anything in a rude, imperfect state. RU'DIMENTS, n. plu. elementary instruction. RUDIMENT'AL, a. *-mĕnt'al*, or RU'DIMENT'ARY, a. *-ĕr-ĭ*, pert. to first principles; in an original or simple state; in *bot.*, in an early stage of development, or in an imperfectly developed condition.

RUDINI, *rô-dē'nē*, ANTONIO STARRABBA DI, Marquis: Italian statesman: b. Palermo, Sicily, 1839, Apr. 6. In 1866 he became mayor of Palermo, and in 1867 a member of the Chamber of Deputies. He was appointed minister of the interior in the following year, but served only a few months. After the fall of the Menabra cabinet he held no prominent office until in 1891, when, having become the head of the constitutional party, he succeeded Signor Crispi in the ministry of foreign affairs, and was made premier. In 1892 the premiership passed again to Crispi, but in 1896 Rudini returned to power as a result of Signor Crispi's disastrous Abyssinian policy. He continued in the premiership until 1898, when he resigned his office. His renewal of the Triple Alliance and conclusion of peace with Abyssinia were the most important of his executive acts, but he continually yielded to the pressure of the radical party.

RUDOLF, *rō′dŏlf* (or RO′DOLF), OF HAPSBURG, German King: founder of the imperial dynasty of Austria, which for a time was that of Germany: 1218, May 1—1291, July 15 (reigned 1273–91); son of Albert, Count of Hapsburg, and Hedwig of Kyburg-Zäringen. R. early showed great personal daring and military skill, and acquired celebrity in his native canton of Aargau for prowess in repulsing the many banditti who infested the district. The death, 1264, of his uncle, Hartmann of Kyburg, to whose rich heritage he succeeded, raised him from a poor noble to an influential lord of extensive territories, including the greater part of Aargau, and various domains in the cantons of Bern, Lucerne, Zug, and Zürich. His ability in government attracted the notice of some of the great electoral princes of Germany; and on the death of Emperor Albert 1273, R. was elected his successor, through the instrumentality chiefly of his powerful friend, the abp. of Mainz. The ratification by Pope Gregory XI. of R.'s title was obtained by various concessions—e.g. renunciation of jurisdiction in Rome, and of feudal superiority over Spoleto and the Marches of Ancona; with the cession of all right on the part of the emperor and his successors to interfere in ecclesiastical elections, or in the internal administration of the German Church. By this agreement, the feuds were appeased which had existed nearly 200 years between the empire and the see of Rome, and R. was able to attend to the settlement of the internal disturbances of Germany. His chief enemy was Ottocar, King of Bohemia, under whom he had once served against the Prussians and Hungarians, and who now refused to do homage to him. The Bohemian king was twice defeated, and was killed in battle (1278), when the emperor seized all the Austrian territories which Ottocar had possessed. Wenceslaus, son of the slain king, having lost no time in tendering homage to R. for the kingdoms of Bohemia and Moravia, the cause of the war was at an end; and R. applied himself to the organization of the state. He did much toward breaking the lawless power of the nobles, by compelling them to demolish the fortresses and strongholds, from which they carried on plundering expeditions against one another, and defended themselves from the power of the law; and we are told that in one year he condemned to death 30 refractory nobles, who had long disturbed the public peace, and razed to the ground about 60 strongholds. He also granted charters to many trading towns and municipalities, and thus gave considerable impetus to trade. The policy of his rule generally was to favor the burgher and working classes, and to repress the tyranny of the powerful nobles. His reign commanded general respect. R. was succeeded in Austria by his son, Albert I., Duke of Austria. See Schönhuth, Huber, Lorenz; also Hirn, *R. von Habsburg* (1874).

RU'DOLF II. (or RO'DOLF II.), Emperor of Germany: 1552, July 18—1612, Jan. 20 (reigned 1576–1612); eldest son of Emperor Maximilian II. of Germany. He was educated at the Spanish court by the Jesuits. On the death of his father 1576, he succeeded to the imperial crown, after having, during the lifetime of his father, been proclaimed king of the Romans (1575). This first reigning namesake of the great progenitor of the Austrian dynasty did not add to the dignity or greatness of the Hapsburg family; and the whole of his reign of 36 years was marked by his persecutions and intolerance, and by the discontent and even insurrection of his subjects. His bigotry and intolerance in forbidding Protestants the free exercise of their religion led them to ally themselves with their co-religionists in the Low Lands and in France (1608); and by implicating the empire in foreign wars, augmented taxation, and increased the monetary difficulties of the state. R., who was gloomy, taciturn, indolent, and bigoted, died unregretted by his subjects, leaving no issue, and bequeathing to his brother Matthias, who succeeded him, an impoverished and distracted state. R.'s taste for astrology and the occult sciences, and his anxious desire to discover the philosopher's stone, led him to extend his patronage to Kepler and Tycho Brahé, whose study of astronomy was thought specially to qualify them for that much-coveted discovery; and the patronage which R. extended to the Danish discoverer, when the latter was compelled to leave his own country, through the jealousy of his brother-nobles, constituted one of R.'s few claims to remembrance in later times. The important astronomical calculations begun by Tycho, and continued by Kepler, known as *The Rudolphine Tables*, were named from R., who originally undertook, but subsequently failed, for lack of means, to defray the expenses of the undertaking. See Gindely, *R. II. und seine Zeit* (1865).

RUDOLPHINE, a. *rû-dŏl'fin* [in honor of Rudolf II., Emperor of Bohemia]: term applied to certain astronomical tables, composed by Kepler and founded on the observations of Tycho Brahé.

RUDOLSTADT, *rô'dōl-stât:* chief town of the principality of Schwarzburg-Rudolstadt, charmingly situated in a hill-girt valley, on the left bank of the Saale, 18 m. s. of Weimar. The chronicles of R. date back to 800; it became a possession of Schwarzburg 1355, and its castle has been the residence of the successive heads of the reigning family since 1599. The city has a palace with a museum of natural history, a national seminary, gymnasium, public library, and among the churches, is the beautiful Stadtkirche dating from the 13th c., rebuilt in the 17th c. and restored in 1879. R. manufactures porcelain, wooden and metal ware, toys, pianos, etc. Pop. 12,400.

RUDRA, *rô'dra*, in Vedic Mythology: collective name of the gods of the tempest, or Maruts, Rudra (in the singular) being the name of their father. (See John Muir's *Contributions to a Knowledge of the Vedic Theogony and Mythology*, in *Journal of the Royal Asiatic Soc.*, new series, I., part 4, London 1864.) In later and Purânic mythology (see INDIA—*Religion:* PURAN'A), R. (the terrible) is a name of S'iva, and the Rudras are his offspring. According to the *Vishn'u-Purân'a*, R. sprang from Brahmâ's forehead, radiant, fierce, and vast, of a figure half male, half female. 'Separate yourself,' Brahmâ said to him, and disappeared: obedient to which command, Rudra became twofold, disjoining his male and female natures, which he again divided into several persons, males and females—some beautiful, some hideous; some black, some white.

RUE, v. *rô* [AS. *hreowan*, to be sorry for to lament: Ger. *reue*, repentance; *reuen*, to repent; Icel. *hryggr*, sorrowful]: to regret; to lament; to grieve for; in *OE.*, to have compassion; to repent: N. in *GE.*, sorrow; repentance. RU'ING, imp. RUED, pp. *rôd*. RUE'FUL, a. *-fûl*, woful; sad; mournful; expressing sorrow. RUE'FULLY, ad. *-lĭ*, mournfully; sorrowfully. RUE'FULNESS, n. *-nĕs*, the state of being rueful; sorrowfulness.

RUE, n. *rô* [F. *rue*—from L. *ruta*; Gr. *rhūtē*, the herb rue], (*Ruta*): genus of perennial plants, of nat. order *Rutaceæ*, having a short 4–5-parted calyx, 4 or 5 concave petals, affixed by a claw, 8 or 10 stamens, and a 4–5-lobed germen, with 8 or 10 nectariferous pores at the base. The species are natives of s. Europe, n. Africa, the Canary Isles, and temperate parts of Asia. They are half shrubby; and have alternate, stalked, repeatedly pinnate leaves with translucent dots; the flowers small, in terminal corymbs. COMMON R., or GARDEN R. (*R. graveolens*), grows in sunny stony places in countries near the Mediterranean. It has greenish-yellow flowers, and glaucous evergreen leaves with small oblong leaflets, terminal leaflets obovate. It is frequently cultivated in gardens in more northern countries. It was formerly called *Herb of Grace* (see *Hamlet*, act iv., scene 5), because it was used for sprinkling the people with holy water. It was in great repute among the ancients, having been hung about the neck as an amulet against witchcraft in the time of Aristotle. It is the *Pēganon* of Hippocrates. R. is still used in medicine as a powerful stimulant; but the leaves must be used fresh, as they lose their virtues by drying. The smell of R. when fresh is very strong, and to many disagreeable; yet the Romans used it much for flavoring food, and it is still so used in parts of Europe. The leaves chopped small are also eaten with bread and butter as a stomachic, but they must be used very sparingly, as they are acrid enough to blister the skin if much handled, and in large doses act as a

narcotic poison. All their properties depend on an acrid volatile oil, used for making *Syrup of Rue*, eight or ten drops of oil to a pint of syrup; and this, in doses of a teaspoonful or two, is a useful medicine in flatulent colic of children. The expressed juice of R., mixed with water, and employed as a wash, promotes growth of the hair.—Some of the species found in n. India resemble

Common Rue (*Ruta graveolens*).

Common R. in their properties, and are used for the same purposes.—The Meadow Rue (*Thalictrum*) of several species in N. America is of another family, *Ranunculaceæ*, known as the Crowfoot family.

RUELLIA, *rô-ĕl′lĭ-a:* genus of plants of nat. order *Acanthaceæ*, natives of tropical and sub-tropical Asia and Australia. Some are very beautiful, and are common ornaments of hothouses in western countries. In parts of China, especially in the province of Che-keang, and on the mountains west of Ningpo, a species of this genus, *R. indigofera*, is cultivated for the excellent indigo which it yields. It is a native also of Assam, and is cultivated there.—See Fortune's *Residence among the Chinese.*

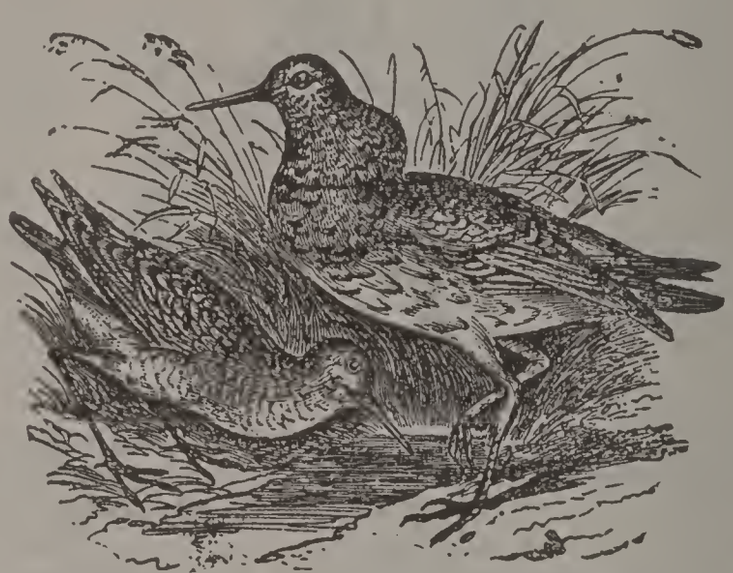
RUFESCENT, a. *rô-fĕs′sĕnt* [L. *rufes′cens* or *rufescen′tem*, becoming red; *rufesco*, I become red—from *rufus*, red]: growing red; approaching to reddish brown; tinged with red.

RUFF, n. *rŭf* [Dut. *ruyffelen*, to rumple: Port. *arrufarse*, to curl, as the surface of water: Lang. *rufo*, a wrinkle or rumple]: a collar of plaited or puckered linen; anything puckered or plaited: species of bird like a snipe (see below): a variety of pigeon: V. in *OE.*, to ruffle; to disorder.

RUFF, v. *rŭf* [Scot. *ruff*, a roll of the drum, a beating with the feet in token of applause: Port. *rufa* or *rufla*, a roll of the drum]: in *Scot.*, to beat with the hands or feet, or with both, in token of applause: N. a beating with the hands and feet as expressive of approbation; a roll of the drum. RUFF'ING, imp.: N. applause by beating the hands and feet. RUFFED, pp. *rŭft*.

RUFF, n. *rŭf* [Port. *rufa*, a game with dice]: *formerly*, a popular game at cards; the act of winning the trick by trumping the cards of another suit: V. to trump any other suit of the cards at whist.

RUFF (*Philomachus pugnax*): only known species of its genus; bird of family *Scolopacidæ*, and, like snipes and many others of the family, inhabitant of marshy places. It is found in most of the n. parts of the world, migrating southward in autumn, and northward in



Ruff and Reeve (*Philomachus pugnax*).

spring. It is found in England and northern Europe and Asia, migrating south in the cold season. It has been set free on the Atlantic coast of the United States, and is becoming naturalized. In size, the R. is considerably larger than a snipe, and is about 12 inches in entire length from point of bill to tip of tail. The tail is short and pointed. The wings are long and pointed. The legs are long and slender, the *tibia* naked some distance above the tarsal joint. The bill is straight, rather slender, as long as the head. The neck of the male is surrounded, in the breeding season, with a *ruff* of numerous long feathers, whence probably the English name. The males are remarkable for diversity of colors, no two specimens being ever closely alike; but ash-brown prevails, spotted or mottled with black; the head, ruff, and shoulders are black, glossed with purple, and variously barred with chestnut. The female (the *Reeve*) is mostly ash-brown, with spots of dark-brown, much more uniform in color than the male. Their nest is

usually on a tussock in a moist, swampy place, and is formed of the coarse grass which surrounds it: the eggs are four in number. The R. is taken for the table in spring, but the young birds taken in autumn are preferable. They are often fattened after being taken, and fed for market on bread and milk with bruised hempseed.

RUFF, or RUFFE, *rûf*, or POPE, n. [origin unknown], (*Acerina cernua*): pretty little fish of the Perch family (*Percidæ*), abundant in the lakes, slow rivers, and ditches of many parts of middle Europe and of England. It is

Ruff or Pope (*Acerina cernua*).

never more than five or six inches long. In shape, it resembles the common perch, but has only a single dorsal fin. The R. is esteemed for the table. It is very easily caught, a small red worm being used as bait.

RUFFED GROUSE: see BONASA.

RUFFIAN, n. *rŭf'ĭ-an* [OF. *rufien*, *ruffien*, a pander (see also RUFFLE 3): It. *ruffiano;* Sp. *rufian*, a swaggerer, a bully]: a brutal fellow, ready for any desperate enterprise or crime: ADJ. brutal; savage: V. in *OE.*, to play the ruffian; to rage; to raise tumults. RUF'FIANLY, a. *-lĭ*, or RUF'FIAN-LIKE, a. like a ruffian; bold in crimes; violent. RUF'FIANISH, a. *-ĭsh*, having the qualities or manners of a ruffian. RUF'FIANISM, n. *-ĭzm*, the act, character, or conduct of a ruffian.

RUFFLE, n. *rŭf'fl* [from RUFF 1, which see]: a strip of cambric or fine linen plaited or contracted into wrinkles, and sewed to the border of a garment, generally understood of ornaments at the wrist; disturbance; agitation: V. to wrinkle or plait a strip of fine cloth; to disturb a smooth surface, as water; to agitate; to disorder; to discompose; to put out of temper. RUF'FLING, imp. *-flĭng*. RUF'FLED, pp. *-fld:* ADJ. furnished with ruffles. RUFFLELESS, a. *rŭf'fl-lĕs*, having no ruffles.

RUFFLE, n. *rŭf'fl* [Port. *rufa* or *rufla*, a roll of the drum: F. *ronfler;* Lang. *rouflar*, to snore, to growl]: in *mil.*, a low vibrating roll—but less loud than the regular roll—of the drum, accompanied with the presenting of arms—a compliment to officers, and at milit. funerals: a kind of flourish upon a drum: V. to beat the ruffle.

RUFFLE, v. *rŭf'fl* [O. Dut. *roffelen, roffen,* to pander: Dan. *ruffer,* a pander]: in *OE.,* to bluster; to be noisy and turbulent; to jar. RUF'FLING, imp. *-flĭng:* ADJ. rough; turbulent: N. commotion; disturbance; agitation. RUF'FLED, pp. *-fld:* ADJ. rough; disordered; agitated. RUF'FLER, n. *-flĕr,* a bully; a blusterer.

RUFIN, n. *rô'fĭn* [L. *rufus,* red]: a red substance formed by the action of heat on phloridzin. RU'FOUS, a. *-fŭs,* in *bot.,* reddish; orange-colored; rusty.

RUG, n. *rŭg* [W. *rhuwch,* a rug: Sw. *rugg,* long, coarse hair: Ger. *rauh,* hairy, shaggy (see ROUGH)]: a coarse, warm, woolen cloth or coverlet having a long, shaggy nap; a soft woolly mat or hearth-rug. RUG-HEADED, having rough, unkempt hair; shock-headed.

RUGÆ, n. plu. *rô'jē* [L. *rugæ,* plaits or folds]: in *anat.,* the folds into which the mucous membrane of some organs is thrown by the contraction of the external coats. RU'GATE, a. *-gāt,* wrinkled. RUGOSA, n. plu. *rô-gō'sa,* an extinct ord. of corals. RU'GOSE, a. *-gōs,* full of wrinkles; rough with wrinkles. RUGOSITY, n. *rô-gŏs'ĭ-tĭ,* the state of being wrinkled. RUGOUS, a. *rô'gŭs,* wrinkled. RUGULOSE, a. *rô'gū-lōs,* finely wrinkled.

RUGBY: colony in Morgan co., Tenn.; 7 m. w. of the Cincinnati, New Orleans & Texas Pacific railroad, 141 m. n. of Chattanooga. It is on the famous Cumberland plateau, a mining and agricultural region of extraordinary richness; and owes its existence to a series of public lectures delivered in the United States by Thomas Hughes (q.v.), of England. A company was formed in New England to acquire land for a farming and industrial colony, and subsequently the company transferred its rights in the scheme to an English syndicate organized by Mr. Hughes in England with a capital of $750,000. A tract of 50,000 acres was purchased, the refusal of 350,000 more secured, a number of English farming families were sent out, and the settlement of the colony made with impressive ceremonies, in which Mr. Hughes participated, 1880, Oct. 5. A town was plotted, a hotel built, several industries were inaugurated, Mr. Hughes made annual visits for several years; and a brother, W. Hastings Hughes, became general superintendent and manager; but the scheme never realized the anticipations of its projectors. It is now classed as a health resort with permanent pop. 300.

RUGBY, *rŭg'bĭ:* market-town of England, county of Warwick, 15 m. n.e. of the town of Warwick, 30 m. e.s.e. of Birmingham; pleasantly situated on rising ground on the left bank of the Avon. It is reached by five railways. It derives its importance and celebrity from its grammar school, founded 1567 by Lawrence Sheriff, London shopkeeper. The buildings of the school, consisting of a fine Elizabethan quadrangle, with cloisters, and an elegant detached chapel, are of brick, with stonework

around the windows and at the angles and cornices. The chapel contains, among other monuments of head-masters, that of Dr. Thomas Arnold. Among Dr. Arnold's successors were Tait, Abp. of Canterbury; and Temple, Bp. of London. The school is generally attended by about 500 pupils. The endowment produces about £5,000 a year, and it offers 20 exhibitions of values from £40 to £80 a year, tenable for four years. A park of 11 acres is set aside for foot-ball, cricket, and other games. The railways and the school give rise to almost all the trade of the town. Pop. 16,850.

RUGE, *rô'gĕ*, ARNOLD: German socialist: b. Bergen, Prussia, 1802, Sept. 13; d. Brighton, England, 1880, Dec. 31. He was educated at Heidelberg, Jena, and in the University of Halle, where in 1830 he became a professor. His first literary production was a translation of Sophocles' *Œdipus in Kolonos* (1830). He was later identified with the founding of the *Hallesche Jahrbücher* and became known as an advocate of radical doctrines. In 1843 he went to Paris, where he was associated with Karl Marx, and there published his *Zwei Jahre in Paris*. In 1847 he started a journal, *Die Reform*, in Berlin. Accused of complicity in the revolution of 1848, he fled to England. He was there identified with Mazzini and Ledru-Rollin in their efforts to organize a democratic league for the establishment of political equality throughout the world. The movement to unite the provinces of Germany in 1866-70 was strengthened by his sympathy, and his services in this cause were recognized by the German empire. He published: *Political Pictures* (1848); *Our System* (1850); *In Former Times* (1862-7); and a *Manifesto of the German People* (1866).

RÜGEN, *rü'ghen:* island belonging to Prussia, largest of the islands of Germany; in the Baltic, off the coast of Pomerania; greatest length 33 m.; greatest breadth 28 m.; 360 sq.m. It is separated from the mainland, with which at one time it was probably connected, by a strait, about a mile wide. The island is so deeply indented on all sides by the sea, that it seems formed of several narrow tongues of land attached to each other, and to these the name peninsulas has been given. On the peninsula of Jasmund is the precipitous cliff Stubbenkammer, the highest point of which (420 ft.) is called the King's Seat, because Charles XII. witnessed from this spot a sea fight between the Swedes and Danes, 1715, Aug. 8. Rugen, formerly Swedish territory, was transferred to Prussia 1815. Hertha Lake, in this island, is believed to be the place where, according to Tacitus, the goddess Hertha (Earth) was worshipped. The soil of the island is productive; cattle are reared; and the fisheries are profitable. The scenery, everywhere pleasing, and frequently grotesque and romantic, together with the facilities for sea-bathing, attracts numerous summer vis-

itors. Chief town, Bergen, in the middle of the island; pop. 4,000. Pop. of island about 46,300.

RUGENDAS, Georg Philipp: German painter: b. Augsburg, 1666; d. there 1742. After six years' study of his art his right hand became disabled, but he continued to work with his left. He painted and engraved much. His pictures are full of spirit and ease; there is an endless variety in the attitudes of his horses. Such was his zeal for art that during the siege of Augsburg in 1703 he freely exposed himself amid the fire and carnage that he might be able faithfully to delineate the scenes around him. Among his engravings are six large ones representing this siege.

RUGER, *rô'gėr*, Thomas Howard: military officer: b. Lima, N. Y., 1833, Apr. 2; d. 1907. He graduated at the U. S. Military Academy 1854; resigned from the army the following year; and studied law and practiced in Janesville, Wis., till the beginning of the civil war. In 1861 he was appointed lieutenant-colonel and promoted colonel of the 3d Wisconsin volunteers; 1862 promoted brigadier-general of volunteers; 1864 brevetted major-general of volunteers; 1866 appointed colonel U. S. A.; 1867 brevetted brigadier-general U. S. A. for gallantry at Gettysburg; 1871-76 was superintendent of the U. S. Military Academy; 1886 promoted brigadier-general U. S. A.; and 1891, Apr. 8, was given command of the division of the Pacific. He was promoted major-general 1895, and retired from service 1897.

RUGGED, a. *rŭg'gĕd* [Sw. *ruggig*, rough, shaggy: Gael. *rug*, a wrinkle]: rough; uneven; shaggy; full of irregular points or asperities; rough in temper; harsh; rocky; inhospitable, as a coast. Rug'gedly, ad. *-lĭ*. Rug'gedness, n. *-nĕs*, the quality or state of being rugged; roughness; harshness; coarseness; boisterousness.—Syn. of 'rugged': rough; shaggy; irregular; uneven; savage; brutal; rude; stormy; tumultuous; tempestuous; turbulent; harsh; sour; surly; discomposed; violent; boisterous; wrinkled; cragged; coarse; hard; crabbed; severe; austere; frowning; inclement.

RUGGLES, *rŭg'glz*, Samuel Bulkley, ll.d.: 1800, Apr. 11—1881, Aug. 28; b. New Milford, Conn.: lawyer. He graduated at Yale 1814, studied law with his father, and was admitted to the bar in Poughkeepsie, N. Y., 1821. He was elected to the assembly 1838; a commissioner to locate the route of the Erie railroad; canal commissioner 1839, and president of the canal board 1840 and 58; commissioner of the Croton aqueduct 1842; U. S. delegate to international statistical congresses at Berlin 1863 and The Hague 1869; U. S. commissioner to the Paris exhibition and delegate to the international monetary conference 1867; and a trustee of Columbia College from 1836 till his death. He had for many years been a resident of New York. He received his degree from Yale 1859, and was author of numerous reports.

RUGGLES, Timothy: American lawyer, politician, and loyalist: b. Rochester, Mass., 1711, Oct. 20; d. Wilmot, Nova Scotia, 1795, Aug. 4. He was graduated from Harvard in 1732, represented Rochester in the general court in 1736, opened a law office at Sandwich, Barnstable co., and was connected with many cases of local importance in Plymouth, Bristol, and Barnstable counties. Subsequently he removed to Hardwick. In 1755 he was second in command to Sir William Johnson at the battle of Lake George, in 1756 was made judge of the court of common pleas of Worcester co., and represented Hardwick in the general court. In 1762-3 he was speaker of the house, and from 1762 until the Revolution chief justice of the court of common pleas in Worcester co. He served with distinction in 1759-60 in the expeditions against Quebec and Montreal, and in recognition received the sinecure post of surveyor-general of the King's forests. He was a delegate in 1765 to the Stamp-act congress at New York, and was elected its president. Upon his refusal to forward to Great Britain the addresses and petitions passed by the congress, he was reprimanded by the general court. From that time he was identified with the royalist cause. In 1774 he was made mandamus councillor, and in consequence was forced for safety to flee from Hardwick to Boston, then garrisoned by the British. He made some efforts to recruit a loyalist corps, and in 1779, on the departure of the British troops, went with them to Nova Scotia, where he became a proprietor of the town of Digby. He was a scholar and wit, and an excellent, though aggressive, pleader.

RUGIN, n. *rô'jĭn:* rough, nappy cloth.

RUGINE, n. *rô'jēn* [F. *rugine,* a surgeon's rasp]: an instrument for removing diseased surfaces of bones; a surgeon's or dentist's rasp.

RUGOSE. See under Rugæ.

RUHMKORFF, *rôm'kŏrf,* Heinrich Daniel: German inventor: b. Hanover, 1803; d. Paris, 1877, Dec. 21. He removed to Paris in 1839, where he continued to reside. In 1851 he invented the induction coil which bears his name.

RUHNKEN, *rôn'kėn,* David: illustrious scholar: 1723, Jan. 2—1798, May 14; b. Stolpe, in Pomerania. He received his academical education first at the Königsberg gymnasium, afterward at Wittenberg University, where he graduated 1743; after which he went to Leyden, and prosecuted classical studies under Hemsterhuis, giving particular attention to the Greek writers. He collected the scholia on Plato, and published an excellent edition of Timæus's *Lexicon Vocum Platonicarum* (Leyd. 1754; re-edited and much improved 1789). He went 1755 to Paris, for prolonged examination of MSS. of the Royal Library and of the Library of St. Germain. Hemsterhuis then procured his appointment of lector (reader) in the University of Leyden, as his own assistant and colleague.

In 1761 he succeeded Oudendorp in the chair of eloquence and history. In 1767 he lost his friend and master Hemsterhuis; and in his capacity as rector of the university delivered a splendid tribute to the deceased (Leyd. 1768). The city of Leyden purchased Ruhnken's great library after his death, and gave his widow an annuity of 500 florins.

Ruhnken was one of the best scholars and critics of the 18th c. His fine taste and sagacity, aided by an astonishing memory and vast learning, enabled him to illustrate the authors of antiquity with wonderful success. He was also a brilliant prelector, for which he was no doubt indebted to the extreme lucidity and grace of his Latin style. A list of his works would occupy much space. Among those not above noted are his edition of vol. II. of Alberti's Hesychius; of Rutilius Lupus; of Velleius Paterculus; of Muretus, etc.—See his Life by Wyttenbach (Leyd. 1799; improved edition Leips 1822, Freiberg 1846).

RUHR, *rôr:* river of Prussia, affluent of the Rhine, rising about a mile from Winterberg, in e. Westphalia, flowing w.n.w., and entering the plain of the Rhine at Mühlheim. It joins the great river at Ruhrort, two m. n.w. of Duisburg: total length 143 miles.

RUHRORT, *rôr'ōrt:* small town of Rhenish Prussia, on the right bank of the Rhine, 63 m. n.e. of Aix-la-Chapelle by railway. It has the best harbor on the Lower Rhine, possesses many large ship-building docks, is the seat of an immense coal-trade with Holland—the coal being derived from large beds of the mineral on the banks of the Ruhr—and has large carrying-trade in corn, timber, and wool, and in miscellaneous articles. A large fleet of steamers, with passengers and traffic, ply from Ruhrort up to Strasburg, and down to Holland. A railway crosses the Rhine here, by means of a large steam ferry-boat on which the cars are transported—being lowered to the water on one side, and lifted to the railway on the other, by powerful engines in two towers, each 128 ft. high. Pop. 12,400.

RUIN, n. *rô'ĭn* [F. *ruine*—from L. *rŭīna,* a rushing or tumbling down, ruin—from *ruĕrĕ,* to fall with violence: It. *ruina*]: fall; destruction; overthrow; that change of a thing which destroys it, which entirely defeats its object, or which unfits it for use; subversion; that which destroys; loss of happiness or fortune; mischief: PLU. the remains of any decayed or demolished place or thing, as a house or city: V. to demolish; to destroy; to subvert; to bring to an end in any manner; to impoverish; to bring to misery or poverty. RU'INING, imp. RUINED, pp. *rô'ĭnd:* ADJ. demolished; destroyed; reduced to poverty; undone. RU'INER, n. *-ẽr,* one who ruins. RU'INOUS, a. *-nŭs,* entirely gone to decay; dilapidated; tending to ruin; pernicious; baneful. RU'INOUSLY, ad. *-lĭ.* RU'IN-

OUSNESS, n. *-nĕs,* the state or quality of being ruinous. RUINIFORM, a. *rô'ĭn-ĭ-fawrm* [L. *forma,* a shape]: in *geol.,* having the appearance of ruins. RUIN-MARBLE, marble whose polished surface presents the appearance of ruined buildings. RUINATE, v. *rô'ĭ-nāt,* in *OE.,* to subvert; to demolish; to destroy utterly. RU'INATING, imp. RU'INATED, pp. *-ĭn-ā-tĕd,* in *OE.,* ruined; destroyed. RU'INA'TION, n. *-ā'shŭn,* in *OE.,* and now *familiarly,* subversion; ruin; utter destruction; a state of misery and want; overthrow.—SYN. of 'ruin, v.': to subvert; demolish; destroy; impoverish; dilapidate;—of 'ruin, n.': destruction; overthrow; subversion; downfall; waste; defeat; perversion; pest; mischief; bane;—of 'ruinous': decayed; pernicious; wasteful; injurious; mischievous.

RUISDAEL. See RUYSDAEL.

RULE, n. *rôl* [OF. *riule, riegle*—from L. *reg'ŭla,* a rule; *rego,* I rule: Prov. *regla;* F. *règle,* a straight piece of wood]: an instrument by which straight lines are drawn, or short lengths measured; that which is established by authority for guidance and direction; the law of a society; government; supreme command; control; a prescribed mode of operation by which certain results may be obtained; an order of a superior court; in *gram.,* a statement by which some established order in the construction of words is expressed; in *arith.,* the prescribed mode for performing any operation: V. to govern; to conduct; to direct; to determine, as a court of justice; to decide; to lay down and settle; to exercise supreme authority. RUL'ING, imp.: ADJ. having control or authority; marking with lines, as with a ruler; predominant; controlling; reigning: N. a rule laid down by a judge or court of law. RULED, pp. *rôld.* RULER, n. *rôl'ẽr,* a governor; an instrument with a straight edge or side for drawing straight lines. RUL'INGLY, ad. *-lĭ.* RULING ELDER, in the *Presb. Ch.,* a member of the lowest ecclesiastical court, called a 'kirk-session,' a layman, whose office is generally to assist the minister in the management of the secular and spiritual interests of the parish. RULE NISI, *rôl nī'sī* [L. *nisi,* unless]: in *law,* an order issued by a court commanding a person or party in a case to show cause why a certain thing should not be done; for *unless* good reasons can be given against doing the thing, the *nisi* rule shall be made *absolute* rule—i.e., the person or party shall be compelled to do the thing. To procure such an order is the first step in a certain class of applications to a court. RULE OFF, to detach or separate by a line of separation; to delete or deduct, as bad debts.—SYN. of 'rule, n.': regulation; maxim; canon; law; precept; guide; direction; method; sway; empire; government; order; control;—of 'ruling, a.': predominant; chief; governing; controlling; prevailing; prevalent.

'RULE BRITANNIA'—RULE OF FAITH.

'RULE BRITAN'NIA:' one of the national anthems of Great Britain, which has been described by Southey as 'the political hymn of this country as long as she maintains her political power.' Its original appearance was in a masque entitled *Alfred*—words by James Thomson the poet, and David Mallet, music by Dr. Arne—performed first 1740, Aug. 1, before Frederick, Prince of Wales, at his residence at Cliefden. The words of the ode are believed to be the composition of Mallet. *Alfred* was altered by Mallet 1751, when three stanzas of *Rule Britannia* were omitted, and three others, by Lord Bolingbroke, substituted for them; but it is the ode in its original form that has taken root.

RULE OF FAITH, in Polemical Theology: term for that which is regarded as the code from which the faith of Christians is to be drawn. One of the most vital of modern religious controversies turns on the question: What is the Christian rule of faith? The Reformers, as a body, laid it down, as a first principle, that the Word of God alone, by which they meant the written word, or the Scriptures, could safely be accepted as a rule of faith: if the Fathers could be received at all, it is only in the light of witnesses, and fallible witnesses, to the ancient interpretation of the Scriptures. The Reformers, however, must be deemed to have allowed to the human reason and conscience the eminent office of deciding what writings shall be considered as giving adequate evidence of being Holy Scripture, with the further office of framing the principal truths of Scripture into a *system* of doctrine; while they must be deemed to have allowed to the church also the eminent office of authenticating and of enforcing on individuals this system of doctrine as a rule of faith.—The whole question is one as to the proper balance and harmonizing of various elements which are divinely assigned to the work of discovering and presenting to men the rule of faith. The view of the Reformers is much modified in the English Church of the Laudian period, and by the successors of that school, the modern Tractarians, who admit the 'consent' of the Fathers as an authoritative interpretation of the Scriptures. Rom. Catholics, on the contrary, while they admit that God's word alone is the rule of faith, yet contend that the Scriptures are not to be considered as the only depository of God's word. Much of the Lord's teaching to his apostles was not committed to writing in these authentic Scriptures; and as the teaching of Christ, wherever found, is God's word, even as much as what is written in the Scriptures, they hold that if it be possible to find such teaching elsewhere than in the Bible, the teaching so found is an essential part of the rule of faith. Now they hold that the traditions of the church, contained in the writings of the Fathers, in the cult, the liturgy, sacramental practices, and the like, are a depository of Christ's teachings, less accessible indeed, but not less

certain, than the Scripture itself; and of this divinely traditional character they regard the church as at all times the authoritative expositor.

Protestants acknowledge the authority of the oral teaching of Christ himself, and of his apostles or others speaking by inspiration; but by reason of the lack of any authoritative or trustworthy record, they deny that any such teaching, not recorded in the Scriptures, is of any value to us. As to the right of the church to expound authoritatively, they deny it altogether—i.e., they profess to deny it; though in effect many sects practically enforce their standards, creeds, or confessions as authoritatively setting forth the teachings of the Bible.

RULE OF THE ROAD: regulations for movements of conveyances or of persons in passing one another, either on land or at sea.—*On Land:* Drivers and riders keep the side of the road next their right hand when meeting: the person neglecting this rule is liable for any damage through such neglect. This rule in the United States is exactly contrary to the rule in Great Britain, where passing must be to the left-hand side of the road.—The rule as regards equestrians and foot-passengers is practically used; but has been held not legally compulsory. It is not so compulsory on vehicles that it may not be deviated from in special circumstances—due care and diligence being taken. A man riding against a horse that is standing, or a conveyance driving against another that is standing still, is answerable for any damage.—*At Sea:* see NAVIGATION LAWS. (Consult McCulloch's *Dictionary of Commerce*—art. 'Collision.')

RULE OF THREE, in Arithmetic: technical term for a rule in arithmetic, otherwise called Proportion (q.v.), which teaches the finding of a fourth number proportional to *three given numbers*. The term 'rule of three' has been in use from the beginning of the 16th c.; and from the great utility of the operation in commercial transactions, it received, almost from the commencement, the name of the GOLDEN RULE (q.v., under GOLD). To the ordinary 'rule of three' was added the *backer rule*, or 'rule of three inverse' (corresponding to inverse or Reciprocal [q.v.] proportion), and the 'double rule of three,' in which two or more ratios are given as determining the number to be found.

RUM, a. *rŭm* [*rome* or *rum*, in cant or gypsy language, signified 'good, noted:' in the primary sense, *rum* signifies bad]: odd; queer; curious; out of the way—all in a contemptuous sense.

RUM, *rŭm:* mountainous island of Argyleshire, Scotland; of the group of the Inner Hebrides, 15 m. n.n.w. of Ardnamurchan Point. It is 8½ m. long, 8 m. broad; 26,786 acres; about 6 per cent. of which is under cultivation. The island is a mass of high sharp-peaked mountains, rising in Haiskeval to the height of 2,659 ft. Pop. below 100.

RUM, n. *rŭm* [in the gypsy or slang tongue, *rum booze*, good drink, strong drink: derived by others from Mal. *bram*, *brum*, an intoxicating liquor: It. *rum;* Port. *rom;* F. *rhum*, rum]: spirits distilled from any of the product of the sugar-cane, generally from the refuse, and molasses. The scummings from the sugar-pans give the best rum that any particular plantation can produce; scummings and molasses the next quality; molasses the lowest. Before fermentation, water is added, till the 'sett' or wort is of the strength of about 12 per cent. of sugar; and every ten gallons yields one gallon of rum, or a little more. The flavor of rum depends mainly on soil and climate, and is not good where canes grow rankly. Pineapples and guavas are at times thrown into the still; but on the great scale, no attempt is made to flavor artificially. The finest-flavored rums are produced by the old-fashioned small stills. The modern stills, which produce a strong spirit at one operation, are unfavorable to flavor. The color of rum is imparted after distillation by adding a certain proportion (varying with the varying taste of the market) of caramel, or sugar melted without water, and thus slightly charred. Rum is greatly improved by age, and old rum is often very highly prized. RUM SHRUB, liqueur in which the alcoholic base is rum, and the other materials are sugar, lime or lemon juice, with the rind of these fruits added for flavor.

RUMA, *rô'mâ:* small town of Austria, in Slavonia, on an affluent of the Save, 35 m. n.w. of Belgrade. The chief industries are wine-culture and the rearing of horses. Pop. 7,800.

RUMA'NIA: see ROUMANIA.

RUMB: for RHUMB, which see.

RUMBLE, v. *rŭm'bl* [Dut. *rommelen;* Dan. *rumle;* Ger. *rummeln*, to rumble: It. *rombare*, to make a clattering noise]: to make a low, heavy, continued sound, as of broad, heavy wheels: N. a hoarse, low, continued sound; a revolving cask or shaking-machine in which small cast-iron articles are cleaned and rubbed bright by friction against one another; a seat for servants behind a carriage. RUM'BLING, imp.: ADJ. making a low, heavy, continued sound: N. a heavy hoarse sound. RUM'BLED, pp. *-bld.* RUM'BLINGLY, ad. *-lĭ.* RUM'BLER, n. *-blẽr*, he who or that which rumbles.

RUMEN, n. *rô'mĕn* [L., the throat]: the first cavity of the complex stomach of ruminants—often called the *paunch.*

RUMFORD.

RUMFORD, *rŭm'fẽrd*, Count (Sir Benjamin Thompson): philosopher and governmental administrator: 1753, Mar. 26—1814, Aug. 21; b. Woburn, Mass. He was educated at a common school, and at the age of 14 was proficient enough in algebra, geometry, astronomy, and the higher mathematics to calculate an eclipse within four seconds of accuracy. He entered a merchant's office in Salem, Mass., at the age of 13, and got his living as a clerk and school-teacher, while he studied medicine and physics. In 1770 he was engaged as teacher of an acad. at Rumford, now Concord, cap. of N. H.; and 1772 married a rich widow of that place, daughter of a minister; and was made major of militia by Wentworth, the English gov. The jealousy of officers over whom he had been promoted, and charges of sympathy with the royal cause, at this period of the outbreak of the American revolution, made it prudent for him to remove to Boston, where he became acquainted with the Brit. commander, Gen. Howe; and when Gen. Washington compelled the surrender of Boston, Thompson was sent to England as bearer of dispatches. In London, he so won the favor of the govt. by his intelligence, as to be appointed under-sec. of state in the colonial office. On a change of ministry, however, he returned to America, and fought in the royal cause. When it failed, he left the Brit. army, with the rank of lieut. col., and entered the service of the king of Bavaria, having been knighted by George III.; and 1784 he was settled at Munich as aide-de-camp and chamberlain to the sovereign. In this post he evinced the energy of his mind and the fertility of his invention. He reorganized the army and improved its tactics. In 1790 he suppressed the long-prevalent beggary throughout the kingdom, took measures for improving the breeds of horses and cattle, and laid out a park for Munich. He rapidly rose to the offices of maj.gen., councilor of state, lieut.gen., minister of war; and was created Count of the Holy Roman Empire, when he chose Rumford (in N. H.), where his fortunes had begun, as his titular designation. In 1795 he visited London, where he was treated with much attention; and finding that his opinion was sought on technological subjects, he published the results of his experience and the records of his labors in Bavaria. Having long and carefully studied the phenomena of heat, he set himself to devise a remedy for the smoky chimneys, then among the greatest nuisances in England; and discovered the principles on which fireplaces and chimneys have since been constructed. Other cases in which greater economy of the application or production of heat could be obtained, as cooking-ranges, stoves, etc., engaged much of his attention. He was suddenly recalled to Bavaria, from whose cap., Munich, the elector had fled, as it was threatened by an Austrian and a French army. R.'s tact and energy prevented the hostile occupation of the city. He had been appointed

pres. of the council of regency; and soon afterward was appointed minister plenipotentiary to the court of St. James; but the British govt., holding to the doctrine of inalienable allegiance, refused to recognize a Brit. subject in that capacity. He declined an invitation to revisit America, where he was greatly admired in spite of his former loyalty to the crown. He finally settled in Paris; busied himself in improvements in artillery and illumination; founded a professorship, in Harvard College, of the application of science to the arts of living; married for his second wife the widow of Lavoisier; and died at Auteuil, near Paris, leaving many important bequests to the Royal Soc. of London, the Amer. Acad. of Sciences, and Harvard Univ. See *Memoir* by Ellis (1876).

RU'MILI: see ROUMELIA.

RUMINANT, n. *rô'mĭ-năn̈t* [F. *ruminant*—from L. *rumĭnans* or *rumĭnan'tem*, bringing up from the throat, chewing over again—from *rumen*, the throat or gullet: It. *ruminante*]: animal that chews the cud—e.g., cow, sheep, camel, etc.: ADJ. having the property of chewing the food over again; chewing the cud. RU'MINANTLY, ad. *-lĭ*. RU'MINATE, v. *-nāt*, to pass the food from the stomach in order to chew it over again; to meditate; to think again and again; to muse on; to ponder over. RU'MINATE, a., or RU'MINATED, a. in *bot.*, applied to the hard albumen of some seeds presenting a mottled appearance and full of chalky matter. RU'MINATING, imp. RU'MINATED, pp. RU'MINA'TOR, n. *-tėr*, one who ruminates or muses on any matter. RU'MINA'TION, n. *-nā'shŭn* [F.—L.]: the act or power of chewing the cud; a musing or continued thinking on a subject.

RUMINANTIA, *rô-mĭ-năn'shĭ-a:* group of animals, in the division *Artiodactyla* (q.v.) of order *Ungulata*. Cuvier treated them as a separate order. The R. are an extremely well-defined group, among whose individuals the habit of *rumination* or chewing the cud is universal and almost peculiar. The R. are strictly and exclusively herbivorous, and have great similarity of structure. They have no incisors in the upper jaw, whose front is occupied by a callous pad. 'The grass is collected and rolled together by means of the long and movable tongue; it is firmly held between the lower cutting teeth and the pad, the cartilaginous upper lip assisting in this; and then, by a sudden nodding motion of the head, the little roll of herbage is either torn or cut off, or partly both torn and cut.'—Youatt. In the lower jaw, there generally appear to be eight incisors; but the two outer are properly to be regarded as canines, and in the *Camelidæ* they assume the ordinary canine form. Some of the R. have canine teeth in the upper jaw, and some are destitute of them. In front of the molar teeth, there is a long vacant space in both jaws. The molars are six on each side in each jaw; their surface exhibits crescent-shaped ridges of enamel. The head is elongated, the neck is always of considerable

length, the eyes are at the side of the head, and the senses of smell and hearing, as well as of sight, are acute. The head is in many R. armed with horns; which in some are found in both sexes, in some only in the male, while in others they are lacking; and this lack characterizes varieties of some species—e.g., of the sheep and ox, in which they are ordinarily present. The horns differ very much in different families, even in their structure, some being hollow (true *horns*), some solid (*antlers*). All the four limbs are terminated by two large toes which are hoofed. Behind the hoof are always two small spurs, rudimentary toes. The metacarpal and the metatarsal bones are united into one, the *cannon* bone. The legs are rather long, and the spinal column is very flexible. The brain of the R. is small, and they show little intelligence: they are not distinguished by any remarkable instincts; and though easily tamed, they are scarcely susceptible of training or education. Very few, however, of the numerous species of R. have been truly domesticated, and probably much is yet to be done in this way.

The R. are generally gregarious; they are distributed over almost the whole world; though none are natives of Australia. They are found in the warmest and the coldest regions. The flesh of all the R. is fit for human food; the fat (tallow) hardens more on cooling than the fat of other animals, and even becomes brittle. The fat, hide, horns, hoofs, hair, bones, entrails, blood, and almost all parts are useful to man.

The intestines are long in all the Ruminantia. The cæcum also is long. The complex stomach, adapted to rumination, consists of four distinct bags or cavities. The first of these, into which the gullet or œsophagus enters, is, in the mature animal, by far the largest; and is called the *Paunch* (L. *rumen*): into this the chief part of the food passes. It is lined with a thick membrane, presenting numerous prominent hard papillæ, secreting a fluid in which the food is soaked. The second cavity is the *Honeycomb Bag* (L. *reticulum*), so called from being internally covered with a network of cells, like those of a honeycomb. This second cavity, or stomach, has also a direct communication with the œsophagus, and fluids seem in general to pass immediately into it, but sometimes or partly also into the other cavities; and it is here chiefly that the cells for retaining water are found in the camel. The third cavity, or stomach, is the *Manyplies* (L. *psalterium*), so called because its lining membrane forms many deep folds, like the leaves of a book, beset with small hard tubercles: this also communicates directly with the œsophagus, by a sort of prolongation of it. The leaves of the membrane seem to serve for the absorption of superfluous fluid from the food. Finally, the food passes into the fourth cavity, which is more elongated than any of the others, and is next in size to the first. This, called the *Reed* or *Rennet* (L. *abomasus*), may be considered as the

true stomach, homologous—if any one of the four parts can be so regarded—to the simple stomach of mammals in general. It is lined with a velvety mucous membrane in longitudinal folds. It is here that the gastric juice is secreted. In young animals, it is the largest of the four cavities, and it is only when they pass from milk to crude vegetable food that the paunch becomes enlarged, and all the parts of the complex stomach come fully into use. It seems to be by a power of what may be called instinctive volition that the animal directs what passes through the gullet into the first cavity, the second, or even the third. It has been found by Flourens, who made many experiments on this subject, that the food consumed by ruminants passed chiefly into the first cavity, but part of it also at once into the second, and even, when given in a *mashed* or in a much comminuted state, into the third.

The particular means by which hastily swallowed food is brought from the paunch, formed into pellets at the base of the œsophagus, and brought up into the mouth for rumination, or second and more thorough mastication, are not thoroughly understood, notwithstanding the patient investigations by Flourens. He ascribes the formation of the pellets, however, to the action of the muscular duct which connects the œsophagus with the second and third stomachs, and the power which the animal has of closing or opening at will the orifices of these cavities.

Chewing of the cud is performed usually in an attitude of repose, and evidently affords pleasure to the animal.

The R. are arranged by naturalists in seven families, all very natural—*Camelidæ* (see CAMEL), *Moschidæ* (see MUSK), *Cervidæ* (see DEER), *Camelopardidæ* (see GIRAFFE), *Antelopidæ* (see ANTELOPE), *Bovidæ* (q.v.), and *Capridæ* (q.v.). For the most important genera and species, see separate titles.

RUMMAGE, v. *rŭm′māj* [Dut. *ruim*, *room*, the hold of a ship; *ruimen*, to make room, to empty: OF. *rum*, the hold of a ship: OE. spelling, *romage*]: to search thoroughly among the things stowed in a given receptacle: N. the proper stowing of merchandise in a ship; a searching carefully by tumbling over things. RUM′MAGING, imp. RUM′MAGED, pp. *-mājd*. RUMMAGE SALE, a clearance-sale of unclaimed goods at the docks, or of the remainder of a warehouse stock.

RUMMER, n. *rŭm′mėr* [Sw. *remmare*; Dut. *roemer*; Ger. *römer*, a large drinking-glass]: a large drinking-glass standing on a foot; a drinking-cup.

RUMOR, n. *rô′mėr* [F. *rumeur*—from L. *rumor*, a repeated saying or telling, the talk of the many: It. *rumore*]: a story passing from one person to another without any known authority for its truth; a flying report: V. to circulate by report. RU′MORING, imp. RU′MORED, pp. *-mėrd*, reported. RU′MORER, n. *-mėr-ėr*, in *OE.*, a spreader of news or rumors.

RUMP, n. *rŭmp* [Ger. *rumpf*; Dut, *rompe*, trunk, body separate from the extremities: Sw. *rumpa;* Gael. *rumpal*, the tail, rump]: the end of the backbone of an animal, with the parts adjacent; the fag-end of anything: in *Eng. hist.*, name applied to a parliament (see RUMP PARLIAMENT). RUMP'ERS, n. plu. *-ėrz*, in *Eng. hist.*, adherents or favorers of the Rump Parliament. RUMP'LESS, a. *-lĕs*, destitute of a rump or tail. RUMP-STEAK, n. *-stāk*, a choice slice or piece of beef cut from the thigh near the rump.

RUMPLE, v. *rŭm'pl* [AS. *gehrumpen*, wrinkled; *hrimpan*, to wrinkle: Dut. *rompelen*, to wrinkle; *rompel*, a wrinkle]: to disorder clothes by rough usage; to pucker; to wrinkle; to crush into irregular creases; to disorder: N. a pucker; a fold or plait. RUM'PLING, imp. *-plĭng*, forming into irregular inequalities, as cloth. RUM'PLED, pp. *-pld*. RUM'PLY, a. *-plĭ*, having rumples.

RUMP PARLIAMENT: in English history, name applied in contempt to the remnant of the Long Parliament after the expulsion of the Presb. members, who were deemed injurious to the popular cause by reason of their open or concealed sympathy with the king, Charles I. Two regiments of the army under Cromwell were sent under command of Col. Pride to the house of commons, 1648, Dec. 6; and 41 members of the Long Parliament who were favorable to compromise were detained in a lower room of the house, 160 were ordered to go home, and only 60 of the most thorough Independents were admitted. The clearance was called *Pride's Purge*, and the privileged members afterward passed by the name of the *Rump*, forming the fag-end of the Long Parliament. This assembly, in conjunction with the army, brought about the arraignment, trial, and condemnation of Charles I. Five years later, the Rump Parliament, forgetting that it was the creature of the army, made a stand against certain demands of the soldiers. The result was that Cromwell filled the house with armed men; the speaker was pulled out of the chair, the mace taken from the table, the room cleared, the door locked, and the parliament declared dissolved. Supreme in the three kingdoms, Cromwell convoked an assembly which assumed the title of Parliament, and acquired from the name of one of its most prominent members, a leather-seller, called Praise-God Barebone, the name of the *Barebone's Parliament.* The Barebone's Parliament, after five months, was dissolved; and Cromwell, raised to the dignity of Protector, convoked two parliaments, and dissolved them for questioning his authority as ruler. (For a brief presentation of the reasons for Cromwell's action in these matters, see CROMWELL, OLIVER.) On Oliver Cromwell's death, and Richard's succession to the protectorate, the military malcontents, coalescing with the Independents in Richard's parliament, declared the expulsion of the Rump illegal, and restored that assembly

to its functions. With the revival of the Rump, its old quarrel with the army revived; and the troops, again surrounding Westminster Hall, expelled it 1659, Oct. 13, a provisional government of army officers assuming the direction of affairs. But the general dissatisfaction having led to a coalition between the Presbyterians and royalists, the army, unable to carry on the government, was reduced to the necessity of once more restoring the Rump, twice ignominiously expelled. The advance of Monk, however, with the army of Scotland, led to a general cry throughout the country for a free parliament. A number of the members who had been excluded by Pride's Purge, reappearing in the house, placed the Independents in the minority; and 1660, Mar. 16, the despised and derided Rump at last solemnly decreed its own dissolution. The most prominent members of the Rump Parliament were Vane and Hazlerig.

RUMPUS, n. *rŭm'pŭs* [It. *rombazzo*, a clatter: Swiss, *rumpusen*, to pull one another about: Icel. *rumr*, clash, noise]: a great disturbance; noise and confusion.

RUMSEY, *rŭm'zĭ*, James: inventor: about 1743-1792, Dec. 23; b. Bohemia Manor, Md. He was a machinist, and his attention was early turned to schemes for improving the mechanism of grist-mills. He constructed 1784 a model of a boat for stemming currents by the force of the stream acting on settling poles. He was the forerunner of inventors of methods of 'jet propulsion'—the method of propelling vessels by discharging from a steam-pump jets of water against the wall of water astern; he exhibited such a 'jet-propelled' boat on the Potomac 1787, Dec. Of the 'Rumsey Soc.,' founded at Philadelphia 1788 to promote this invention, Benjamin Franklin was pres. R. went to England, and, with a boat constructed on his plans, there navigated the Thames, 1792, Dec. He died shortly afterward. He was author of *Short Treatise on the Application of Steam* (1788).

RUMSEY, William: 1841, Oct. 18—1903, Jan. 16: American jurist: b. Bath, Steuben County, N. Y.; d. New York. He was educated at Williams College, volunteered in the Union army in April 1861, and was granted his diploma from the college in June. He served through the war, attaining rank of captain of volunteers in 1863, major in 1864, and brevet lieutenant-colonel in 1865, in which year he was mustered out of service. He was secretary of the United States legation in Japan in 1865-6, and in 1880-1901 served as judge in the seventh judicial district of the supreme court. He then resigned and engaged in law practice until his death.

RUN.

RUN, v. *rŭn* [AS. *rinnan*, to run: Dut. and Ger. *rennen*, to run: Icel. *renna*, to flow: Sw. *rinna;* Dan. *rinde*, to flow]: to go, move, or pass on a surface in almost any manner; to cause to move swiftly; to move on the ground by long, quick steps; to rush violently; to fuse or melt; to become liquid; to take a course at sea; to drive with violence, as a ship ashore; to ply or pass, as a coach or ship; to move or flow, as water; to pursue; to contend in a race; to have success; to strive at, followed by *after;* to contract, as a debt, followed by *into* or *in;* to pass from one state or condition to another; to fall; to pass; to make transition; to proceed; to discharge matter, as a sore; to extend to: N. flow; course; motion; a pleasure-trip; continued success; an unusual demand on a bank for payment of its notes and for the return of deposits; distance sailed by a ship; a voyage. RUN'NING, imp.: ADJ. in succession; kept for the race; being in motion; flowing; successive; continuous; easy; discharging matter, as a sore: N. act of moving on with celerity; the discharge of a wound or sore; an expeditious way of joining together pieces of material in sewing. RUN, pp. *rŭn*. RAN, pt. *răn*, did run. RUNNER, n. *rŭn'nėr*, he who or that which runs; a messenger; a racer; a pulley; a wheel; the support of a sleigh; in *bot.*, a leafy shoot; a slender prostrate stem rooting at the joints, as in the strawberry (see below). RUNNERS (see KIDNEY-BEAN). TO LET RUN, to allow to pass or move freely. TO RUN AFTER, to pursue or follow; to endeavor to obtain. TO RUN AMUCK, to run wildly and madly; to act entirely without discrimination (see AMUCK). TO RUN AT, to attack with sudden violence. TO RUN AWAY, to flee; to elope. TO RUN AWAY WITH, to carry off; to drag rapidly and with violence, as a horse running off. TO RUN DOWN, to chase to exhaustion, as a fox; to crush or overthrow; to traduce or censure; to attempt to lower or depreciate a man in the estimation of others. TO RUN DOWN A COAST, to sail along it. TO RUN DOWN A SHIP, to run against her and sink her. TO RUN IN, in *slang*, to take into custody, said of a policeman. TO RUN ON, to continue in the same line or course; to talk unceasingly. TO RUN OUT, to waste; to exhaust; to come to an end. TO RUN OVER, to overflow; to recount cursorily; to go over, as by riding or driving; to examine. TO RUN RIOT, to go to the utmost excess. TO RUN THROUGH, to expend; to waste; to pierce, as with a sword. TO RUN UP, to build hastily, as a house; to swell or increase, as an account; to erect. IN THE LONG RUN, at last; in the end or final result. THE COMMON RUN, the generality of people; ordinary course or kind. A SHEEP-RUN, a range or large extent of ground for feeding a flock. RUNNING FIGHT, a fight between a party pursuing and a party fleeing. RUNNING FIRE, the fire of troops in rapid succession. RUNNING KNOT, a kind of knot made to draw or slip easily, as on a snare for catching rab-

bits. RUNNING RIGGING, those parts of a ship's rigging or ropes which pass through blocks. RUNNING TITLE, the title of a book continued from page to page on the upper margin—called also a *heading*. RUNNING GOODS, to import or export them without paying duty; to smuggle.—SYN. of 'run, v.': to move quickly; pass; rush; flee; emit; go away; flow; stream; melt; fuse; proceed; vanish; fall; pierce; stab; incur; push.

RUNAGATE, n. *rŭn'a-gāt* [Eng. *run*, and OE. *gate*, a way: Skeat identifies *runagate* with *renegade*, which see]: a refugee; a fugitive; an apostate; a renegade.

RUNAWAY, n. *rŭn'a-wā* [*run*, and *away*]: a fugitive; one who flies from danger or restraint.

RUNCIMAN, *rŭn'sĭ-man*, ALEXANDER: Scottish painter: b. Edinburgh, 1736; d. there, 1785, Oct. 21. He was placed at 14 with some house-painters, who used to adorn the mantel-pieces of the houses which they painted with landscapes. He devoted himself entirely to this art; and acquired considerable local fame for his landscapes. In 1766 he visited Italy, where he met Fuseli. He spent five years in Rome, assiduously studying and copying the Italian masters; and in 1771 returned with powers increased and taste improved. Just at that time he obtained the mastership of the Trustees' Academy; and thus secured in the means of subsistence he applied his leisure to historical painting. Among his best-known productions may be mentioned: *Macbeth and Banquo*, in a landscape; a *Friar*, in a landscape; *Job in Distress; Samson Strangling the Lion; Figure of Hope; Saint Margaret Landing in Scotland; Christ and the Woman of Samaria; Agrippina Landing with the Ashes of Germanicus;* and the paintings in Ossian's Hall at Penicuik.

RUNCINATE, a. *rŭn'sĭ-nāt* [L. *runcīnātus*, planed off; *runcīnă*, a large saw]: in *bot.*, applied to a leaf toothed like a large pit-saw, having large marginal divisions directed in a curved and serrated manner toward the base, as the dandelion.

RUNCORN, *rŭng'kawrn:* thriving market and manufacturing town and river-port of Cheshire, England; on the left bank of the Mersey, 12 m. s.e. of Liverpool. The town is the terminus for the Bridgewater and the Mersey and Irwell canals. It has a custom-house, and contains iron-foundries, soap and chemical works, ship-building yards, etc.; and in the vicinity are collieries, and slate and freestone quarries. Large quantities of freestone are shipped to distant ports. There is a viaduct 1,500 feet long and 95 feet above high water across the Mersey. Pop. 25,000.

RUNDLE, n. *rŭnd'l* [Ger. *rund*, circular: Eng. *round*]: a round; a step of a ladder.

RUNDLET, n. *rŭnd'lĕt*, or RUNLET, n. *rŭn'lĕt* [a dim. of Eng. *round:* OF. *rondele*, a rundlet]: a small cask or barrel.

RUNE, n. *rôn* [Goth. *runa*, a mystery, a furrow or line: Icel. *run*, plu. *runir*, runic letters: Gael. *run*, a secret or mystery: Ger. *raunen*, to whisper: AS. *run*, a magical character]: secret alphabet or system of writing; a runic letter or character. **Runes**, n. plu. *rônz*, runic letters or poetry. **Runic**, a. *rô'nik*, pert. to the anc. Goths, or their language and letters: N. the letters of the alphabet of the anc. Scandinavians, principally formed of straight lines; also, the language.—*Runes* is the term for the earliest alphabet in use among the Teutonic and Gothic nations of n. Europe. The exact period of the origin of these characters is not known: their original use seems to have been for secret purposes of divination. The resemblance which some of the runic characters bear to the Phœnician alphabet, and others derived from it, has led to the supposition that they were introduced by Phœnician merchants who traded with the coasts of the Baltic; and while the mass of the people were allowed to know but little of them, the priests systematized them, and retained full knowledge of them for use in establishing reputation for superior power and intelligence. Scandinavian and Anglo-Saxon legends agree in ascribing the invention of runic writing to Odin or Wodin. The countries in which traces of the use of runes exist include Denmark, Norway, Sweden, Iceland, Germany, Britain, France, and Spain; and they are found engraved on rocks, crosses, monumental stones, coins, medals, rings, brooches, and the hilts and blades of swords. Runic letters were often cut also on smooth sticks called *rûn-stafas*, or mysterious staves, and used for divination. But there is no reason to believe that they were at any time in such familiar use as are the characters of a written language in modern times, nor have we any trace of their use in books or on parchment. We have an explanation of the runic alphabet in various MSS. of the early middle ages prior to the time when runes had altogether ceased to be understood.

Part of Runic Cross at Ruthwell, Dumfriesshire.

The systems of runes in use among the different branches of the Teutonic stock were not identical, though their strong family likeness shows their common origin. The letters are arranged in an order distinct from that of any other alphabetical system, and have a purely Teutonic nomenclature. Each letter is, as in the Hebrew-Phœnician, derived from the name of some well-known familiar object, with whose initial letter it corresponds. Runes, being associated in the popular belief with augury and divination, were generally discouraged by the early Christian missionaries, who sought to supplant them by Greek and Roman characters. But it was not easy suddenly to stop their use, and runes are traced in early Christian inscrip-

writing in this district has been accounted for by the fact that, after the death of Edwin and the flight of St. Paulinus, the restoration of Christianity in Northumbria was by missionaries of the Irish school, whose predecessors had adopted the policy, not, like Augustine and his brethren, of destroying the monuments of pagan antiquity, but of allowing them to remain, and consecrating them by marking them with the symbols of Christianity. Runes are said to have been laid aside in Sweden at 1001, and in Spain they were officially condemned by the Council of Toledo, 1115.

The different systems of runes, all accordant up to a certain point, have been classed as the Anglo-Saxon, the German, and the Norse, each containing different subordinate varieties. The Norse alphabet is generally considered the oldest, and parent of the rest. It has 16 letters, corresponding to our *f*, *u*, *th*, *o*, *r*, *k*, *h*, *n*, *i*, *a*, *s*, *t*, *b*, *l*, *m*, *y*, but has no equivalent for various sounds which existed in the language, in consequence of which the sound of *k* was used for *g*, *d* for *t*, *b* for *p*, and *u* and *y* for *v*: *o* was expressed by *au*, and *e* by *ai*, *i*, or *ia*; and the same letter otherwise was made to serve for more than one sound. Other expedients, in the course of time, were employed to obviate the deficiency of the system, e.g., addition of dots, and adoption of new characters. But the runic system received fuller development among the Germans and Anglo-Saxons, particularly the latter, whose alphabet was extended to no fewer than 40 characters, in which seem to have been embraced, more nearly than in any modern alphabet, the actual sounds of a language. Till recently the Norse runes had been most studied; but of late the Anglo-Saxon have received considerable attention. The following table exhibits the best-known forms of the Anglo-Saxon, German, and Norse runic alphabets, with the names and the power of the several letters.

Anglo-Saxon.			German.		Norse.	
ᚠ	feoh	f	ᚠ	feh	ᚠ	fé
ᚢ ᚤ	ur	u (short)	ᚢ	uur	ᚢ	ur
ᚦ	thorn	th	ᚦ	dorn	ᚦ	thurs
ᚩ ᚬ	os	o (short)	ᚭ	oos	ᚬ	os
ᚱ	rad	r	ᚱ	rat	ᚱ	ridr
ᚳ	cæn	k	ᚴ	cen	ᚴ	kaun
ᚷ	gyfu	g	ᚸ	gebo		
ᚹ	wen	w	ᚹ	huun		
ᚻ	hægel	h	ᚺ	hagal	ᚼ	nagl
ᚾ	nyd	n	ᚾ	nod	ᚾ	naud
ᛁ	is	i (short)	ᛁ	iis	ᛁ	is
ᛄ	gear	y (cons.)	ᛃ	ger	ᛅ	ar

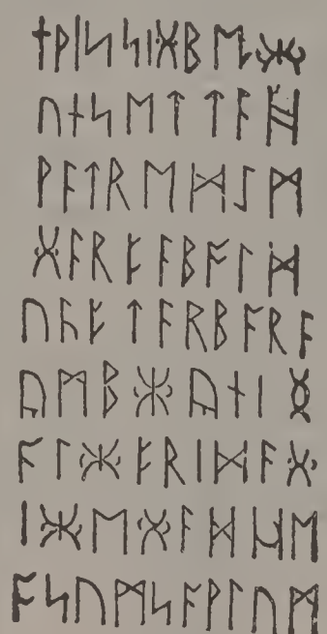
RUNE.

Anglo-Saxon.		German.		Norse.
eoh	e (long)	ih		
peorth	p	perd		
eolhx	x	elix		
sigel	s	sigi		sol
tir	t	ti		tyr
beorc	b	borg		biarkar
eh	e (short)	eh		
man	m	man		madr
lagu	l	lago		laugr
ing	ng	inc		
dæg	d	tag		
œthel	o (long)	odil		
ac	a (long)	ac		yr
æsc	a (short)	asc		
yr	y	yur		
ear	au	der		
ior	io			
queorn	q			
calc				
stan	st			
gar	dzh			
	z			
vult	v			

The Anglo-Saxon runes, as here given, are from a variety of MS. authorities, the most complete containing 40 characters, while some extend as far only as the 25th or 28th letter. Neither the name nor the power of some of the later letters is thoroughly known, and they are without any equivalents in the Norse runic system. The German runes are from a MS. in the conventual library of St. Gall in Switzerland. Though the various runic alphabets are not alike copious, the same order of succession among the letters is preserved, except that, in the Norse, *laugr* precedes *madr*, although we have

placed them otherwise with the view of exhibiting the correspondence of the three systems. The number of characters in the Anglo-Saxon alphabet is a multiple of the sacred number eight; and we have the evidence both of a Swedish bracteate containing 24 characters, and of the above-mentioned St. Gall MS., that there was a recognized division of the alphabet into classes of eight letters—a classification which forms the basis of a system of secret runes noticed in that MS., of which runes there are several varieties specified.

The best-known inscriptions in the Anglo-Saxon runic are those on two gravestones at Hartlepool in Northumberland, on a cross at Bewcastle in Cumberland, and on another cross at Ruthwell in Dumfriesshire. The inscription on the w. side of Bewcastle cross, which we give as a specimen of Anglo-Saxon runes, is a memorial of Alcfrid, son of Oswiu, who was associated with his father in the govt. of the kingdom of Northumbria, 7th c.



Runes.

It has been thus deciphered into the Anglo-Saxon dialect of the period:

+ THIS SIGBECUN
SETTÆ HWÆTRED
EM GÆRFÆ BOLDU
ÆFTÆR BARÆ
YMB CYNING ALCFRIDÆ
GICEGÆD HEOSUM SAWLUM.

Or, in modern English:

This memorial
Hwætred set
and carved this monument
after the prince
after the king Alcfrid,
pray for their souls.

The inscription on the Ruthwell cross, after being long a puzzle to antiquaries, was deciphered 1838 by John M. Kemble, eminent Anglo-Saxon scholar. It is written alternately down one side of the stone and up another, and contains a portion of a poem on the subject of the Crucifixion. Kemble's interpretation received satisfactory confirmation by the discovery of a more complete copy of the same poem in a MS. vol. of Anglo-Saxon homilies at Vercelli.

D. H. Haigh, whose researches have added much to our knowledge of Anglo-Saxon runes, has endeavored to set up for them a claim of priority over the Norse characters: his arguments are worthy of consideration, but can scarcely be called conclusive.

The Scandinavian kingdoms contain numerous runic monuments, some written *boustrophedon*, or with the lines beginning alternately from the right and left; and there are many interesting inscriptions on Swedish gold bracteates. The Celtic races, from their connection with the Scandinavians, became acquainted with their alphabet, and used it in writing their own language; hence in the Western Islands of Scotland, and in the Isle of Man, are runic inscriptions, not in the Anglo-Saxon, but in the Norse character, with a few peculiarities.

We find the Norse runes sometimes denoting numerals, in which case the 16 characters stand for the numbers from 1 to 16.

See Planta's essay, *On the Runic or Scandinavian Language;* W. C. Grimm, *Ueber Deutsche Runen; Archæologia*, XXVIII.; Haigh's *Anglo-Saxon Conquest of Britain;* Dr. D. Wilson's *Prehistoric Annals of Scotland;* the Danish works of Worsaae and Wimmer.

RUNIC KNOTWORK is a term often applied inaccurately to a kind of interlaced ornamentation in MSS. and on monuments of Anglo-Saxon, Norman, Scandinavian, Scoto-Irish, and Pictish origin, 6th to 12th century.

RUNG: pp. of the verb RING, which see.

RUNG, n. *rŭng* [Goth. *rugga*, a staff: Gael. *rong;* Icel. *röng*, a staff, the rib of a boat: Ger. *runge*, a bolt]: a staff; a spoke; a step of a ladder; a spar; a floor-timber in a ship.

RUNGPUR, *rŭng-pôr′:* British dist. of India, presidency of Bengal; bounded e. by the Brahmaputra, n. by the protected state of Cush Behar; 3,476 sq. m.; pop. about 2,100,000. The surface is so low that a large proportion of it is inundated during the rains. Indigo, for whose manufacture there are numerous large factories, is the great export.

RUNIC STAFF, n.: willow staff inscribed with runes, used in magical ceremonies or divinations.

RUNJEET-SINGH, *rŭn-jēt'-sĭng*, Maharajah of the Punjab (generally described by English writers as *King of Lahore*): 1780, Nov. 2—1839, June 27; b. Gugaranwalla. His father, Maha-Singh, was sirdar of Sukur-Chukeah, one of the 12 missouls or military organizations of the Sikhs, and died when R. was about 12 years old, leaving a full treasury and a well-regulated government, in the hands of his widow. When R. was about 17 years old, his mother died suddenly; and he assumed the government, quickly showing an overwhelming ambition, and unusual capacity in policy and address, with great force of character. In 1799 he took possession of Lahore; and 1812, having compelled all but three of the Punjab sirdars to resign their authority, he organized the whole under one sovereignty, and proclaimed himself *rajah*. His army had been organized and disciplined after European fashion by English officers in his service, so that the wild and undisciplined troops of the neighboring states had no chance of successfully opposing him. About this time he obtained from one of the dispossessed rulers of Afghanistan the celebrated *Koh-i-nûr* (q.v.), as the price of his assistance in recovering the throne of Cabul. In 1819 R. annexed Cashmere, and assumed the title of *maharajah*. In 1822 he took into his service Allard and Ventura, two French officers who formerly served under Napoleon, and by their aid he finished the reconstruction of his army; and then (1829) wrested from the Afghans the province of Peshawar. He had now an extensive territory, peopled by more than 20,000,000, and a well-trained army of 70,000 men, of whom 36,000 were infantry, thoroughly disciplined. Between him and the British there was always mutual distrust, dissembled on both sides by show of extreme cordiality. R. is one of the remarkable men in eastern history. He was totally uneducated; could neither read nor write; yet showed indefatigable energy in administration, with a clemency rare in an Asiatic despot. See *English Cyclopædia;* Cuvilier-Fleury, *Notes Historiques sur le Général Allard; Revue Britannique*, X., XIII., XXIII., XXVII.

RUNKLE, *rŭngk'l*, JOHN DANIEL, PH.D., LL.D.; mathematician: b. Root, Montgomery co., N. Y., 1822, Oct. 11; d. 1902. While yet a student in the Lawrence Scientific School of Harvard Coll., he was appointed assistant in the preparation of the *Nautical Almanac* 1849; he continued in this work till 1884. He was professor of mathematics in the Massachusetts Institute of Technology from 1865, and was its president 1870–78. To his efforts principally was due the introduction of manual training in the institute. He was author of *New Tables for Determining the Values of Coefficients in the Perturbative Function of Planetary Motion* (1856); *Elements of Plane and Solid Analytic Geometry* (1888); and of many papers on manual training and industrial education.

RUNLET: see RUNDLET.

RUNLET, n. *rŭn'lĕt* [see RUN]: a little stream; a rivulet.

RUNNEL, n. *rŭn'nĕl* [see RUN]: a brook; a small stream.

RUN'NER, in Botany: long slender branch proceeding from a lateral bud of a herbaceous plant with very short axis, or, in popular language, without stem. It extends along the ground and produces buds as it proceeds, which often take root and form new plants. Strawberries afford a familiar example. Another is found in *Potentilla anserina*. Runners are common in the genus *Ranunculus*.

RUNNER, RUNNING: see under RUN.

RUNNET: see RENNET 2.

RUNNYMEDE, or RUNNIMEDE, *rŭn'ĭ-mēd:* long green meadow, on the right bank of the Thames, from which it is partly concealed by plantations of willows, 20 m. w.s.w. of London. It is proposed to derive the name from the Sax. *rhynes*, water-brooks, which abound in these meadows; others suppose the word to be *Running-mead*, referring to the horse-races which appear to have been held here from time immemorial, and which still take place in August. R. is of great historical interest, from the fact that Magna Charta was signed by King John, 1215, June 15, either on this meadow, or on Charter Island, a short distance off the shore. The Great Charter itself professes to have been signed *per manum nostram in prato quod vocatur Runnimede*. See MAGNA CHARTA.

RUNRIG LANDS, n. plu. *rŭn'rĭg lăndz:* in *Scot.*, lands where the alternate ridges of a field belong to different proprietors; also, lands which consist not of ridges only, but of alternate portions of several acres each.

RUNT, n. *rŭnt* [Scot. *runt*, a cabbage-stalk: prov. Eng. *runt*, dead stump of a tree: Ger. *rumpf*, a trunk (see RUMP)]: an old woman or withered hag; a poor, lean, and sorry animal below the usual size.

RUPEE, n. *rô-pē'* [Hind. *rūpīya*, a rupee]: an East Indian current silver coin valued about 2*s.* sterling (about 50 cents). The coin bearing the name R. was struck first by Shir Shah, and was adopted by Akbar and his successors; it was of the weight of 175 grains troy, and was considered to be pure; but in the decline of the Mohammedan empire every petty chief coined his own rupee, varying in weight and value. After many variations, the coinage of the E. India Company was entirely remodelled 1835, and a coin, thenceforth termed the company's R., with its proportionate sub-divisions, was struck to replace all former currencies, being of the same weight and fineness throughout, and bearing inscriptions in English, or in English and Persian, with the sovereign's head. A *lac* (lakh) of rupees is 100,000,

and, with the rupee at 2*s.* (50 cents), would be worth £10,000 ($50,000). A *crore* of rupees, 10,000,000, is accordingly worth from £1,000,000 to less than £800,000 ($5,000,000 to less than $4,000,000), according to the price of silver.

The recent depreciation in the value of silver has seriously affected Indian finances and Indian commerce, as well as the trade of the world. The R. has still the purchasing power of 2*s.* (50 cents) in India; but in England its market value had in 1885 fallen to 1*s.* 7*d.* (about 39 cents). As the govt. of India has yearly to send to England about 15 millions of pounds, gold value, the heavy loss is apparent.—The R. is current not in India only, but also in the islands of the E. Archipelago and various districts bordering on India.

RUPERT, *rō'pėrt*, Prince of Bavaria: 1619, Dec. 18—1682, Nov. 29; b. Prague; third son of the Elector Palatine Frederick V., and Elizabeth, daughter of James I. of England. He studied at the Univ. of Leyden. He fought during the Thirty Years' War against the imperialists, but was a prisoner of war 1638–42. He then retired to England, where he received from his uncle, Charles I. of England, a commission to command a regt. of horse at Worcester against the parliamentarians. The impetuosity with which he charged the enemy there, and in the battle of Edgehill, would have done more service to the royalists had not his rashness in pursuing the wavering foe nearly counteracted the advantages which he had gained. Subsequently, at Chalgrove, Newark, and Newbury, he was more successful; but his lack of patience, his petulant disregard of orders, and his hasty retreat from the field of battle at Marston Moor, resulted in consequences most disastrous to the royalist fortunes. His conduct at Naseby, and his hasty surrender of the city of Bristol, irritated the king, who forthwith deprived him of his command, and requested him to leave England without delay. He went to France and fought in the French service. In 1648, however, he was recalled to England, and appointed to command the royal fleet. In this new vocation he acquitted himself better; till, 1651, the great parliamentarian Admiral Blake attacked the prince's squadron, and burned or sunk most of his ships. With the few vessels remaining to him, R. escaped to the W. Indies, where with his brother Maurice he led a buccancering life, maintaining himself and his men by seizing English and other merchantmen. After a few years R. eluded the vigilance of Cromwell's captains, and made his way to France, where he remained till the restoration of his cousin, Charles II. R. served with distinction under the Duke of York, and in concert with the Earl of Albemarle, against the Dutch, and died in possession of various offices and dignities, being a privy councilor, a member of the admiralty, gov. of Windsor Castle, etc. R. was always a stanch Protestant; but shared in the immorality of Charles's court. His last ten years were

spent in retirement in chemical, mechanical, and physical researches. He improved the mechanical mode of engraving in mezzotinto. The glass bead known as Prince Rupert's Drop (q.v.) was named from him.

RU'PERT'S DROP. See PRINCE RUPERT'S DROPS.

RU'PERT'S LAND: named from Prince Rupert (q.v.), one of the founders of the Hudson's Bay Company; formerly the official designation of the extensive tract which forms the basin of Hudson's bay and strait; bounded n., s., and e. by the watersheds of the Arctic, St. Lawrence, and Atlantic rivers. The w. boundary is from Deer lake to a point a little w. of the Red River Settlement (q.v.). In 1870 the territory held by the Hudson's Bay Company was admitted into the Dominion of Canada, a portion of Rupert's Land falling within the province of Manitoba. The whole of the vast territory known as Rupert's Land slopes inward toward Hudson's bay, and is well supplied with navigable rivers. The mountains of this region, chiefly on the boundaries, are of primitive rock, and a great portion of the country is densely wooded. The soil is rich, but the severity of the climate—which is also very variable in summer and autumn—mostly prevents cultivation of the cereals and other alimentary plants; in fact, they are planted only in the neighborhood of the trading posts of the Hudson's Bay Company (q.v.) and in the agricultural settlement on Red river, in the s.w. In the n., the vegetation and climate are those of the polar regions. The chief dependence of the inhabitants of Rupert's Land for food and clothing is on the animal kingdom, here abundantly represented. Beavers are still found; and bears, otters, martens, and musk-rats are plentiful, their skins forming the chief commercial product of the country. There are also abundance of foxes of various colors, bears, wolves, Canadian lynxes, etc. Among animals used for food are the wapiti, reindeer, moose, and other species of deer; the musk-ox, hares, and an immense variety of wood-fowl and other birds. The numerous rivers and lakes are abundantly stocked with fish. The population, which is scanty, is composed of British or Canadians, and aboriginal tribes.

RU'PIA, n. *rô'pĭ-a* [Gr. *rhupŏs,* dirt]: eruption of the skin, characterized by flattish, distinct *bullæ* or blebs, containing a serous, purulent, or sanious fluid, which become changed into thick scabs. Three varieties are described: *R. simplex, R. prominens, and R. escharotica.* In its simplest form, the blebs are not preceded by inflammatory symptoms, are about an inch in diameter, and contain a fluid which is originally thin and transparent, but soon thickens, becomes purulent, and dries into brown ragged scabs, elevated in the center. The scabs are easily separated, and leave ulcerated surfaces, on which several successive scabs usually form before healing. In a severer form, *R. prominens,* the scab projects so much in the center as to resemble a limpet-shell in form.

Rupia is a chronic disease, usually limited to the limbs, the loins, and the nates. It is not contagious, and generally attacks persons debilitated by old age, intemperance, bad living, or previous diseases, especially smallpox, scarlatina, and syphilis. The general treatment consists mainly in administration of tonics, such as quinine, the mineral acids, etc. Some writers recommend tincture of serpentaria; and there is no doubt that certain cases which will not yield to tonics rapidly improve when treated with iodide of potassium. The local treatment consists in puncturing the blebs as soon as they arise, in removing the scabs by poulticing, and in applying a slightly stimulating application—e.g., solution of nitrate of silver—to the subjacent ulcers. The disease is frequently tedious and obstinate, but the patient almost always recovers.

RUPICOLA, n. *rô-pĭk'o-la* [L. *rupes,* a rock; *colo,* I inhabit]: genus of insessorial birds called rock manakins or cocks of the rock; type of *Rupicolinæ,* a sub-family of *Pipridæ.* The species are remarkable for possessing an elevated crest of feathers on the head, and for the extreme freshness and delicacy of the color of their plumage. The adult males are of splendid orange color.

RUPPIN, Neu, *noy rûp'pēn:* town of Prussia, province of Brandenburg, on a small lake of the same name, which communicates with the Elbe; 38 m. n. of Potsdam. It contains a castle and a lunatic asylum. The people are engaged in brewing, spinning, and manufacture of linen and woolen cloths. Pop. 15,000.

RUPTURE, n. *rŭp'tūr* or *-chûr* [F. *rupture,* a rupture —from L. *ruptus,* burst, rent; *rumpĕrĕ,* to break]: act of breaking; state of being broken or violently parted; a fracture; a breach of peace; open hostility; a tumor caused by the protrusion of a part of the bowels; Hernia (q.v.): V. to part by violence; to burst; to suffer a breach or disruption. Rup'turing, imp.: N. in *bot.,* an irregular manner of bursting. Rup'tured, pp. *-tūrd.* Rupture-wort, n. a British plant, the *Herniārĭa glabra,* ord. *Illecebrāccæ.*—Syn. of 'rupture, n.': breach; fracture; disruption; burst; dissolution.

RURAL, a. *rô'ral* [F. *rural,* rural—from L. *rurālis,* belonging to the country—from *rus,* the country: It. *rurale*]: pert. to the country, as distinguished from the city or town; pert. to farming. Ru'rally, ad. *-lĭ.* Ru'ralness, n. *-nĕs,* the state or quality of being rural. Ru'ralize, v. *-īz,* to ramble in the country; to lead a country life. Ru'ralizing, imp. *-zing.* Ru'ralized, pp. *-īzd.* Ru'ralist, n. *-ĭst,* one who leads a rural life. Rural dean, official, ordinarily a beneficed clergyman, appointed in an episcopal diocese, for a district called a deanery, to supervise church edifices and furniture, glebe houses, schools, appliances of public worship, etc.—reporting to the bishop. Ruri-decanal, a. *rô'rī-dĕk'a-nal* [see Decanal]: pert. to a rural dean.

RURIK, *rô'rĭk:* considered the founder of the Russian monarchy: died 879. According to most authors, he was a 'Varangian' (Varangians = Normans of the Baltic coast) of Scandinavian origin, invited by the Slaves of Novgorod to come and rule over them; according to others, he was chief of a tribe of Norse colonists near the Gulf of Finland, and, after a long contest, subdued the northern Slaves and neighboring tribes of Finns; while Kostomarof attempts to prove him a Lithuanian. That he was either a Scandinavian or of Scandinavian origin, there seems very little doubt; and it is as generally maintained that, accompanied by his brothers, Sindf (Sineus) and Truvor, he, at the head of a small army, took possession of the country s. of the Gulf of Finland, Lakes Ladoga, Onega, and Bieloe 861 or 2, and laid the foundation of a monarchy. His brothers afterward settled, one at Bielo-Ozero, the other at Isborsk; but dying without issue, their principalities were united to Novgorod by Rurik. Novgorod was made the seat of govt. 864 or 865, and the various insurrections of his Slavic subjects were quenched in blood—Vadim, their leader, whose valor is celebrated by the ancient chroniclers, perishing by R.'s own hand. To secure himself and his descendants in their newly acquired territory, R. invited various colonies of Varangians to settle in the country. During his reign, some of the Varangians attempted a land expedition against Constantinople, but, renouncing the scheme, settled on the banks of the Dnieper, and founded the little state of Kiev. The family of R. reigned in Russia till the death, 1598, of Feodor, son of Ivan the Terrible, when, after a brief intestine contest, it was succeeded by the nearly allied House of Romanoff (q.v.). Many noble families of Russia are descended in the male line from R.; and the princes of Romodanofski-Ladyshenski are descendants in the female line.—See Prof. Thomsen's Lectures on this subject (1878).

RUSA, *rô'za:* genus of *Cervidæ*, or sub-genus of *Cervus* (see DEER), containing a number of species of deer, natives of the forests of the E. Indies; which may be described as stags with round antlers, a snag projecting in front just above the base of each, and the top forked, but the antlers not otherwise branched. They are generally of large size, and among them are some of the finest kinds of Asiatic deer. The GREAT R. (*R. Hippelaphus*) is supposed by some to be the *Hippelaphus* of Aristotle; but his description is not complete enough to identify the species: it is a native of Java, Sumatra, etc., and is about the size of a large stag, with brown rough hair, the neck with a long mane.—The SAMBUR or SAMBOO (*R. Aristotelis*) of India is a similarly large and powerful animal, and no Indian deer is more sought by European sportsmen. It is supposed by some to be also the *Hippelaphus* of Aristotle. The color is sooty brown, and the male has a mane. It is solitary in its

habits, and delights in low forests where water abounds. —The Axis (q.v.) is very nearly allied to this genus.

Sambur (*Rusa Aristotelis*).

RUSCHENBERGER, *rô'shĕn-bĕr-gĕr*, WILLIAM S. W.: naval surgeon: b. Cumberland co., N. J., 1807, Sep. 4. He graduated from the medical dept. of the Univ. of Pennsylvania 1830; the following year was commissioned surgeon in the U. S. navy; served in the E. India squadron, at Philadelphia, and in the hospital at Brooklyn; was again in the E. Indies, and afterward with the Pacific and the Mediterranean squadrons. In the civil war he was at the navy-yard in Boston, was afterward on duty at Philadelphia, was retired 1869, Sep. 4, and became med. director on the retired list 1871, Mar. 3. He has been pres. of the Acad. of Natural Sciences in Philadelphia, and has published valuable works on the natural sciences.

RUS'CUS: see BUTCHERS' BROOM.

RUSE, n. *rôz* or *rôs* [F. *ruse*, cunning—from *ruser*, to use artifice, formerly a hunting term for the doubles of a hare in its attempts to escape the dogs—from L. *recusārĕ*, to reject]: means employed to deceive; a little artifice or stratagem; a clever trick or stratagem.

RUSH, v. *rŭsh* [Ger. *rauschen*, to rustle, to whisper, as the wind among bushes, to move swiftly: Dut. *ruysschen*, to roar, to groan: Norw. *rusk*, noise, rattle]: to tumble down with rapidity, as a stream; to move with force or violence; to enter with undue haste or eagerness: N. a violent motion or course; a driving forward with eagerness and haste. RUSH'ING, imp.: ADJ. moving with impetuosity: N. a violent driving of anything; rapid course. RUSHED, pp. *rŭsht*. RUSH'ER, n. *-ĕr*, one who, or that which, rushes.

RUSH, n. *rush* [AS. *risce;* Dut. and Ger. *rusch;* Gael. *ras*, a rush—the rush being probably so called from its whispering sound when moved by the wind]: a plant of many species growing on wet ground; the *Juncus glaucus* or hard rush, the *J. effūsus* or soft rush, and the *J. conglom′ĕrātus* or hollow rush, ord. *Juncācĕæ*, are used for mats and chair-bottoms. RUSH-LIKE, a. like a rush: weak. RUSHED, a. *rŭsht*, covered with or made of rushes. RUSHY, a. *rŭsh′ĭ*, abounding with rushes. RUSH′INESS, n. *-nĕs*, the state of abounding with rushes. RUSH-BOTTOMED, a. having a bottom made of rushes. RUSH-LIGHT, or CANDLE, a night-light having a wick of rush-pith. NOT WORTH A RUSH, worthless or of little value.

RUSH (*Juncus*): genus of plants of nat. ord. *Juncaccæ*, having a glume-like (not colored) perianth, smooth filaments, and a many-seeded, generally 3-celled capsule. The species are numerous, mostly natives of wet or marshy places in the colder parts of the world; some are found in tropical regions. Some are absolutely destitute of leaves, but have barren scapes (flower-stems) resembling leaves; some have leafy stems, the leaves rounded or somewhat compressed, and usually jointed internally; some have plane or grooved leaves on the stems; some have very narrow leaves, all from the root. The name R. perhaps properly belongs to those which have no proper leaves, of which we have several species. The COMMON R. (*J. effusus*) has round stems, bearing or not bearing small lateral heads of flowers, and popularly known as *Rushes*, used for plaiting into mats, chair-bottoms, toy baskets, etc. It is cultivated in Japan for making mats. In ruder times, when carpets were little known, rushes were much used for covering the floors of rooms; to which many allusions are in early English writers. The stems of the true rushes contain a large *pith* or soft central substance, sometimes used for wicks of candles. There are 14 species described in Gray's *Manual*, including, besides the Leafless R., 6 Grassy-leaved and 4 Knotty-leaved. The Wood R., with 1-celled pod and soft-hairy stem and leaves, is of the genus *Luzula*, *L. pilosa* having chestnut-brown umbels, and *L. campestris* light-brown. Rushes are often very troublesome weeds to the farmer. Thorough drainage is the best means for riddance of them. Lime, dry ashes, road scrapings, etc., also are useful. Tufts of rushes in pasture are a sure sign of insufficient drainage. Many marshy and boggy places abound in some of the species having leafy stems and the leaves jointed internally, popularly called *Sprots* or *Sprits* in England. They afford very little nourishment to cattle; but are useful for making coarse ropes for ricks, etc., stronger than those made of hay.

RUSH, BENJAMIN, M.D.: physician: 1745, Dec 24—1813, Apr. 19; b. near Philadelphia; grandson of a Quaker follower of William Penn. He was educated at Princeton College; studied medicine in Philadelphia, London, Edinburgh, and Paris; and 1769 was made prof. of chemistry in the Philadelphia Med. College, and became a contributor to medical literature. Elected a member of the continental congress, he advocated and signed the Declaration of Independence. In 1777 he was appointed surgeon-gen. and physician-gen. of the continental army. His duties did not prevent him from writing a series of letters on the constitution of Pennsylvania, which was changed by his influence. He resigned his post in the army, because he could not prevent frauds on soldiers in relation to hospital stores. In 1785 he planned the Philadelphia Dispensary, first in the United States; and was a member of the convention which ratified the federal constitution. Retiring from politics, he became prof. of the theory and practice of medicine in the Philadelphia Med. College; and was so successful in treatment of yellow fever, 1793, that he was believed to have saved the lives of 6,000 persons. His practice, in consequence, became so large that he prescribed for 100 patients a day, whom he saw even at his meals. After his prosperity began, he gave one-seventh of his income in charity. Virulently attacked by Cobbett, who published a newspaper in Philadelphia, he prosecuted him for a libel, and recovered $5,000 damages. His medical works brought him honors from several European sovereigns: the chief were *Medical Inquiries and Observations*, *Diseases of the Mind*, *Medical Tracts*, *Health*, *Temperance*, *and Exercise.* In 1779 he was appointed treasurer of the U. S. mint, which post he held until his death in Philadelphia.

RUSH, RICHARD: statesman: 1780, Aug. 29—1859, July 30; b. Philadelphia; son of Dr. Benjamin R. He graduated from Princeton College 1797, and after studying law was admitted to practice 1800. He was appointed atty.gen. of Penn. 1811, and in the same year became comptroller of the U. S. treasury; was U. S. atty.gen. 1814–17, and acting sec. of state part of the latter year; minister to England 1817–25, sec. of the U. S. treasury 1825–29, and an unsuccessful candidate for the vice-presidency 1828. He was appointed by Pres. Jackson to represent the govt. in the claim of the United States to the legacy of James Smithson, of England, and was minister to France 1847–49. While in England he negotiated the n.e. boundary, and other important treaties. He published *Narrative of a Residence at the Court of London from* 1817 *to* 1825 (2 vols.), and *Washington in Domestic Life* (1857). After his death his sons published a vol. of his *Occasional Productions.* —His bro., JAMES R., M.D. (1786–1869; b. Philadelphia), graduated from Princeton College 1805, studied medicine, and practiced in his native city. He left

about $1,000,000 to found the Ridgway Branch of the Philadelphia Library, named in honor of his wife, from whom he received a fortune; but he imposed such peculiar conditions that his gift has been of little benefit. He published *Philosophy of the Human Voice* (1827); *Analysis of the Human Intellect*, 2 vols. (1865); and other works.

RUSH-NUT: see CYPERUS.

RUSHWORTH, *rŭsh'wėrth*, JOHN: 1607–90; b. Northumberland, of anc. family: English compiler, whose work entitled *Historical Collections of Private Passages of State, Weighty Matters in Law, and Remarkable Proceedings in Parliament*, is a most important contribution to our knowledge of the civil war in the time of Charles I., and of the events that led to it. He studied for a time at Oxford, and settled in London as a barrister. He appears to have used his time, for many years, in attending the star chamber, the court of honor, the exchequer chamber, parliament, etc., and in taking shorthand notes of the proceedings. When the Long Parliament met 1640, R. was appointed assistant clerk of the house of commons. He sat in parliament as member for Berwick; was sec. to Sir Thomas Fairfax 1645, and to the lord keeper of the great seal 1677. In 1684, when he had reached the age of 77, he was arrested for debt, and imprisoned in the King's Bench, where he died. In his later years, he became mentally infirm through excess in drink. R.'s *Historical Collections* cover the period 1618–48, and were published in four instalments—1659, 80, 92, and 1701; republished 1721 in 7 vols. The work is of extreme value; but, not being impartial, it requires some caution in the use.

RUSK, n. *rŭsk* [Sp. *rosca*, a roll of bread: origin unknown]: bread or cake sliced and exposed in a slow oven until of a pale-brown color, used as food for infants and invalids; a small light cake.

RUSK, JEREMIAH MCLAIN: 1830, June 17—1893, Nov. 21: agriculturist; b. Morgan co., O. He was brought up as a farm hand and stage-driver; removed to Vernon co., Wis., and engaged in farming 1853; became sheriff of the co.; entered the union army as maj. of the 25th Wis. inf. 1862; served to the close of the war and was brevetted brig.gen. 1865; was comptroller of Wis. 1866–70; and was elected member of congress as a republican 1870, 72, and 74, and gov. of Wis. 1882, 84, and 86. He declined several public offices tendered him by Pres. Garfield, and in 1889 was appointed by Pres. Harrison sec. of the new dept. (previously bureau) of agriculture.

RUSKIN, *rŭs'kĭn*, JOHN, LL. D.: English art-critic, author, and earnest preacher of righteousness; 1819, Feb. 8—1900, Jan. 20; b. London. He was educated in the house of his father, a wealthy wine-merchant, in or near London, till he went, as a gentleman-commoner of Christ-Church, to Oxford. There he gained the Newdigate prize for English poetry—by a poem on *Salsette and Elephanta*—1839, and took his degree 1842. He studied painting under Copley Fielding and Harding. In 1843 appeared vol. i. of his *Modern Painters*, whose primary design was to prove the superiority of modern landscape-painters, especially Turner, to the ancient masters; but in the later vols. (v., the last, pub. 1860), the work expanded into a vast discursive treatise on the principles of art, interspersed with artistic and symbolical descriptions of nature, more elaborate and imaginative than any writer, prose or poetic, had ever before attempted. *Modern Painters* was essentially revolutionary in spirit and aim, many of the most distinguished landscape-painters, both of old and of new schools, being summarily dealt with and condemned; and the work naturally excited the hostility of the conservatives in art. But the unequalled splendor of its style gave it a place in literature; the originality of its views, the lofty conception of the painter's art displayed in it, and the evident justness of at least large portions of the criticism, secured recognition. Disciples soon appeared; and the views of art enunciated by R. gradually made way, and have largely determined the course of later English art. (Vol. i. was pub., much altered, 1846. The last three vols. contained illustrations by the author. A revised and altered ed. appeared 1860-67; another 1873, when the plates of the illustrations were destroyed; a later edition compressed has no plates.) In 1849 appeared *The Seven Lamps of Architecture;* and 1851-53 *The Stones of Venice*, both being efforts to introduce a new and loftier conception of the significance of domestic architecture. They were exquisitely illustrated by the author himself.

About this time, *Pre-Raphaelitism* began to develop itself as a distinctive phase of modern art, and Ruskin warmly espoused its cause (1855-60). Pre-Raphaelitism denotes the style of the chief painters before Raphael, such especially as Giotto and Fra Angelico; but it is most frequently applied to the revival in England of a similar style in the works of the 'Pre-Raphaelite Brotherhood,' comprising Millais, Holman Hunt, and Gabriel Dante Rossetti. Their principles harmonize with those of R., and he became their most earnest and powerful advocate. According to R., 'Pre-Raphaelitism has but one principle, that of uncompromising truth in all that it does, obtained by working everything, down to the most minute detail, from nature and nature

only. Every Pre-Raphaelite back-ground is painted to the last touch in the open air, from the thing itself. Even a Pre-Raphaelite figure, however studied in expression, is a true portrait of some living person. Every minute accessory is painted in the same manner.' The earnestness of the men of the 13th and 14th c., and their deep religious feeling, as also their true imaginative power, further commended their system of painting.

In 1854 he published four admirable and suggestive *Lectures on Architecture and Painting;* and 1858 two *Lectures on the Political Economy of Art.* The *Notes on the Construction of Sheepfolds* (1851), dealing with the discipline of the church, illustrates his ingenuity in devising picturesque titles that suggest no notion of the subject treated. *The King of the Golden River,* a fairy story, was published 1851; and 1854 *The Two Paths,* lectures on art and its application to decoration and manufacture. The *Elements of Drawing* and the *Elements of Perspective* appeared 1857 and 59. The *Crown of Wild Olive* is a series of four essays on work, traffic, war, and the future of England; *Sesame and Lilies,* lectures on good literature. *The Queen of the Air* is a study of the Greek myths of cloud and storm; *Ethics of the Dust,* lectures on crystallization; *Ariadne Florentina,* on wood and metal engraving; *Aratra Pentelici,* on the elements of sculpture. The *Laws of Fesolé* are the elements of painting and drawing; *Frondes Agrestes* are readings from *Modern Painters; Giotto and His Works, Love's Meinie,* and *Deucalion* are other publications. *Munera Pulveris* contains the elements of political economy according to R.; while *Unto this Last* attacks the current doctrines of that 'dismal science.' *Val d'Arno* contains lectures on the art of the 13th c. in Pisa and Florence; another course deals with *Art in England. Mornings in Florence* are studies of a Christian art for English travellers; and *St. Mark's Rest* is on the history of Venice. *The Eagle's Nest* discusses the relation of natural science to art; *Time and Tide* are letters to a working-man of Sunderland. *Arrows of the Chace* is a selection of his letters; *On the Old Road* is the title of a republication of his miscellaneous pamphlets, articles, an dessays. An early volume of poems, issued for private circulation, became a much-sought-after bibliographical treasure. *Fors Clavigera* appeared as a sort of periodical at irregular intervals for several years, in the form of letters to the workmen and laborers of Great Britain. *Proserpina,* published in the same way, gives studies of wayside flowers. In 1885 R. began to publish a copious autobiographical work, *Præterita,* whose successive chapters appeared at intervals in pamphlets. All R.'s books are now with-

drawn from the usual channels of publication, and those of them still in print or republished are issued by his own agent. Second-hand copies of the early works are eagerly bought at high prices: thus the old ed. of *Modern Painters*, worth £6, 10s. ($31.63) at its publication 1860–67, has repeatedly been sold since 1880 for £30 or £35 ($146 to $170). From 1869 till 79 R. was Slade prof. of art at Oxford; 1871, he gave £5,000 for endowment of a master of drawing there. In 1871 the degree LL.D. was bestowed on him by the Univ. of Cambridge. Subsequently he founded a museum at Abbeydale, near Sheffield (afterward transferred to Bewdley), where he bestowed part of his own priceless library and art treasures. In his later years he established himself at Brantwood, in the Lake Country.

R. is or was primarily a critic of art; but, as the titles of his works indicate, his teaching has extended over a wide area. Art for him is inseparably bound up with truth, with morals, with religion; and in most departments of political philosophy, in social and political economy, R. has been constant, in season and out of season, in lifting up his testimony against what he conceives to be low views, perverted ideals, coarse and vulgar complacencies. Like Carlyle, whose pupil he professes to be, he holds the world in these later days to have gone on a wrong tack; in his views of nature and life, he is, he says, 'alone in the midst of a modern crowd, which rejects them all,' and has to 'maintain himself against the contradiction of every one of his best friends.' Within the sphere of art criticism, he holds that an important part of his life-work has been to teach 'the supremacy of five great painters, despised till he spoke of them—Turner, Tintoret, Luini, Botticelli, and Carpaccio.' His lifelong contention with political economy is mainly on the ground of its egoism and immorality. He affirms broadly that his *Munera Pulveris* contains the first accurate analysis of the laws of political economy published in England. What is usually called political economy is, to him, nothing more than the investigation of some accidental phenomena of modern commercial operations, and has no connection with political economy as treated by the great thinkers of the past—such as Plato, Xenophon, Cicero, Bacon. True political economy regulates the acts and habits of a society or state, with reference to its maintenance, as domestic economy does those of a household. It is neither an art nor a science, but a system of conduct and legislation, founded on the sciences, directing the arts, and impossible except under certain conditions of moral culture. By the maintenance of the state, which is the object of political economy, is to be understood the support of its population in healthy and happy life, and the increase of their numbers, so far as is consistent with their happiness. It is the 'multiplication of human life at the highest standard,' cherishing and developing the noblest type of manhood, alike in beauty, in intelli-

gence, and in character. The wealth of which R. takes cognizance is not mere exchangeable value, but intrinsic and effectual wealth, consisting of things contributing to the support of life in its fullest sense—as land, houses furniture, instruments, food, medicine, clothing, books, works of art. The subject of political economy, therefore, embraces a large part of the sphere of private and public morals, and of political philosophy. It deals with the relation of master to servant, employer to workman, of the state to its subjects, with the province of sanitary and commercial legislation, and with the duty of the state in promoting education, suppressing luxury, regulating the hours and wages of labor. He is as confident as the most revolutionary reformer that the conditions of modern society must be completely changed and reconstructed; his ideals coincide in many points with those of many socialists, though many of his aims would be regarded as distinctly reactionary. A 'violent illiberal' rather than a conservative, R. regards reverence for natural beauty, truth, and godliness, as the highest elements in life, and would give properly constituted authority extensive powers; usury of any kind is as indefensible as avarice or dishonesty. Till of late he was seldom treated as a serious political economist; but it has recently been admitted that he has actually pointed out some real weaknesses of the old abstract political economy as a scientific theory. He has devoted a large part of his originally large fortune to founding the St. George's Guild, a kind of primitive agricultural community, where the old-world virtues are strenuously inculcated on young and old, and where ancient and homely methods are cherished in defiance of all modern mechanical and manufacturing processes. Not more remarkable than the eloquence, power, and richness of R.'s English style, are the confidence and dogmatism of his assertions, the audacity of his paradoxes, the fearlessness of his denunciations; while his earnestness, conviction, and self-denying honesty of purpose are undisputed. His influence in creating a new interest in the beauty of nature and of art in England and America has been profound; and though the world rejects many of his theories of social economy as perverse, paradoxical, and impracticable, he has done much to dethrone mechanical and wooden theories of society, to vivify ideals of life, and to ennoble standards of conduct. A few years ago R. founded the St. George Museum, which, under his direction, soon became one of the most valuable collections of artistic and scientific treasures in the world. In 1890 he presented the collection to the corporation of Sheffield, and Apr. 16 it was opened to the public in Meersbrook Hall, under the name of the Ruskin Museum.

RUSS, a. *rŭs:* pert. to Russia: N. the Russian language. RUSSIAN, a. *rŭsh'an,* pert. to Russia or the language; N. a native of Russia.

RUSSELL, *rŭs'ĕl*, BENJAMIN: 1761, Sep. 13—1845, Jan. 4; b. Boston: journalist. He began learning the printer's trade, but left to enter the revolutionary army, and while a soldier sent war-letters to the Worcester *Spy*. In 1784 he established in Boston the *Columbian Centinel*, semi-weekly, which became a newspaper of great influence; and 1795–1830 published the *Gazette*, in the interest of the federalists, retaining the editorship of the *Centinel* till 1828. He represented Boston in the general court 24 years, and was a member of the state senate and of the executive council many years.

RUS'SELL, DAVID ALLAN: 1820, Dec. 10—1864, Sep. 19; b. Salem, N. Y.: soldier. He graduated at the U. S. Milit. Acad. 1845; served through the Mexican war and was brevetted 1st lieut. for gallantry; promoted capt. 1854; appointed col. 7th Mass. vols. 1862, Jan.; brevetted lieut.col. U. S. A., July; promoted maj. 8th U. S. inf. Aug., and brig.gen. vols. Nov.; commanded a brigade at Fredericksburg, Chancellorsville, and Gettysburg, and a division in the Richmond campaign 1864; was in all the battles from the Wilderness to Petersburg; was called to the defense of Washington against the Confederate raid under Gen. Early; and in the subsequent pursuit of Early was killed at the head of his column in the battle of Opequan.

RUS'SELL, HOUSE OF: ancient noble family in England. The first dukedom of Bedford expired in the person of the great regent of France (in the time of Henry VI.), with whom the present dukes are unconnected by affinity: see BEDFORD, JOHN PLANTAGENET, Duke of. In Wiffin's *Memoir of the House of Russell*, the family is traced back to a Scandinavian King Olaf, and his descendant, a jarl who settled in Normandy and became possessor of the castle of Rozel, near Caen.—Hugh de Rozel and his brother accompanied William in his invasion of England; and from the younger brother descended Sir James Rozel, or Russell (as it had then begun to be called), gov. of Corfe Castle 1221, and Sir W. Russell, who represented Southampton in the first parliament of Edward II. From the latter R. directly descended Sir John R., one of the most valiant soldiers of the age of chivalry. His son, Sir John R., was speaker of the house of commons in the time of Henry VI. The high fortune and eminence of the House of R. date from his grandson, JOHN R., one of the most accomplished gentlemen of his time, who, 1538, was elevated to the peerage, under the title 'Lord Russell, Baron Russell of Cheyneys, county Buckingham.' He became Earl of Bedford 1550. His son, the second earl, was a person of eminence in Queen Elizabeth's reign. The earldom became a dukedom under William, fifth earl, who fought for the parliament at Edgehill, and for the king at Newbury, and was created duke 1694.—A notable member of the family was EDWARD R., who was bred to the sea, and was groom of the bedchamber to the Duke of York,

afterward James II.; but immediately after Lord William R.'s judicial murder, he retired from court. Strenuously supporting the Revolution, he obtained high naval commands from William III., and distinguished himself as one of the naval heroes of the period, particularly by his victory over the French fleet at La Hogue 1692. His cousin was Lord William Russell (q.v.).

JOHN R., fourth Duke of Bedford (d. 1771), was first lord of the admiralty 1744–48; became lord. lieut. of Ireland 1756; was accredited minister plenipotentiary to the court of France 1762, and signed at Fontainebleau the preliminaries of peace with France and Spain. He was pres. of the council in the administration formed by Grenville 1763. His concern with public affairs covered the term between the fall of the administrations of Walpole and of Chatham; and 1744–48 he shared with Pelham the premier, and the Duke of Newcastle, the substantial power of the govt. His correspondence, preserved at Woburn Abbey, and given to the world by Earl Russell, contains authentic materials for illustration of the political history of England 1744–70. The introduction to vol. i. contains a brief historical sketch by him.—FRANCIS R., fifth Duke of Bedford (1765–1802, grandson of the fourth duke), was a man for whom his friends had an attachment amounting to enthusiasm. He was a steady friend of popular freedom. He died unmarried. JOHN R., sixth Duke of Bedford (1766–1839, Oct. 20, bro., of the fifth duke), was father of Earl John Russell (q.v.). —FRANCIS R., seventh Duke of Bedford (d. 1861, eldest son of the sixth duke), declined office, but invariably supported the measures of the whig governments, and had great influence in the whig counsels. He was an enthusiastic patron of the turf, and his stud at Newmarket was famous. In his later years, he busied himself in the comfort of the tenantry and the laborers on his extensive estates.—WILLIAM R., eighth Duke of Bedford (1809–72, only son of the seventh duke), was retired in his habits, and took no active part in political affairs.—FRANCIS R., ninth Duke of Bedford (b. 1819, eldest son of the late Major-gen. Lord George R., and cousin of the eighth duke).—The heir-apparent to the dukedom is his son George, Marquis of Tavistock. The dukes of Bedford have a magnificent mansion and park at Woburn, near Bedford.

RUS'SELL, JOHN HENRY: naval officer: b. Frederick, Md., 1827, July 4. He entered the U. S. navy as midshipman 1841; became passed midshipman 1847, master and lieut. 1855, commander 1867, capt. 1874, commodore 1883, rear-admiral 1886, Mar. 4; and was placed on the retired list 1886, Aug. 27. In 1861, Sep., he commanded a boat expedition that cut out the Confederate privateer *Judah*, at Pensacola, for which he was thanked by the navy dept., Pres. Lincoln, and his native state.

RUSSELL, John Russell, Earl, K.G.: English minister and statesman: 1792, Aug. 18–1878, May 28; b. Hertford street, Mayfair, London; third son of John, sixth Duke of Bedford. He was, for a short time, at Westminster School, whence he was sent to Edinburgh, then preferred to the English universities by the great whig families. Here he studied under the care of Prof. Dugald Stewart; and here first, at the meetings of the Speculative Soc., he exercised his powers of debate. In 1821 appeared his *History of the British Constitution*, and 1824 *Memoirs of the Affairs of Europe from the Peace of Utrecht*. In more recent years he compiled from the family archives the *Correspondence of John, fourth Duke of Bedford*, which throws much light on the secret history of the early part of George III.'s reign; *Life, Diary, and Letters of Thomas Moore*, in pursuance of a promise made to the poet several years before; *Correspondence of Charles James Fox*, and *Life and Times* of that great whig statesman.—In 1813 he was elected for the family borough of Tavistock. He made his first motion in favor of parliamentary reform in 1819, and continued for 12 years to bring the subject almost annually before the lower house; he was also the strenuous advocate of the repeal of the Test and Corporation Acts, Rom. Cath. Emancipation, and other measures of civil and religious liberty. In 1828 he carried by a large majority his motion for the repeal of the Test and Corporation Acts. In 1829 he supported the Rom. Cath. Emancipation Bill. In 1830 R. was appointed to the lucrative office of paymaster of the forces, and was one of the four members of the govt. to whom Earl Grey intrusted the task of framing the first Reform Bill; and the imperishable honor devolved upon R. (1831, Mar. 1) of proposing the bill, which became a law 1832, June 4, and which saved the country from menacing revolution (see Reform, Parliamentary). R. left office with the Melbourne govt. 1834, Nov. In 1835 he carried a resolution in committee for appropriating any surplus which might remain, after fully providing for the spiritual wants of the members of the Irish Church, to the general education of all classes of Christians. The report of the committee having been affirmed by the whole house, the govt. of Sir Robert Peel was dissolved, and that of Lord Melbourne restored, and R. became home sec., with a seat in the cabinet. He proposed and carried bills for municipal reform, for commutation of tithes, for general registration of marriages, births, and deaths, for amendment of the marriage laws, which enabled dissenters to be married in their own chapels, and for English church reform. In 1837, he carried a series of bills by which capital punishment was finally removed from forgery and all offenses except seven.

In 1841 R. and his colleagues made way for the administration of Peel. 1845, Nov., R. wrote a letter from Edinburgh to the electors of the City of London, who had made him their representative in parliament, an-

nouncing his conversion to the total and immediate repeal of the corn laws. This letter led to the resignation of the Peel cabinet; and R. was commissioned by the queen (1845, Dec. 11) to form an administration, which at first he failed to do through the antipathy of Earl Grey to Lord Palmerston; and Sir Robert Peel, being recalled to power, had the honor of carrying the repeal of the corn laws. Peel, however, soon found it necessary to resign; and R. became nominally what he had been really during the greater part of the Melbourne administration—prime minister. The papal bull, parcelling England into dioceses, extorted from R. an indignant protest. R.'s advice to the queen to dismiss her foreign sec. and his own ancient colleague, Lord Palmerston, for communicating, without consultation with his colleagues, his approval of the French *coup d'état*, precipitated the downfall of the R. administration; and 1852, Feb., R. ceased to be first lord of the treasury. In the cabinet of the Earl of Aberdeen, R. filled the post of foreign sec., with the leadership of the house of commons. As commissioner to the Congress of Vienna, he incurred so much unpopularity by recommending terms of peace, and a plan of counterpoise suggested by Austria, that he retired from the ministry 1855, July. In Lord Palmerston's second administration R. became again foreign sec., which office he held until 1865. He threw the national influence into the scale of Italian unity and independence; uttered remonstrances against the annexation of Savoy and Nice by France, which gave great offense to the govt. of Emperor Louis Napoleon; and wrote dispatches expressive of the indignation of the British govt. at the despotic acts of Russia in Poland; but he incurred reproaches from the Poles and their sympathizers for withdrawing from the Austrian and French alliance when war with Russia appeared imminent. R. was always prominent in promoting the education of the people; and, with the assistance of Lord Lansdowne, laid the foundation of the present system of national education. He brought forward for many years a measure admitting the Jews to parliament —an object gained finally 1858. In the public mind, R. is remembered as the steady and untiring advocate of parliamentary reform. In 1861 he was called to the upper house, and exchanged the courtesy-title of 'Lord John' for that of Earl Russell. On the death of Lord Palmerston 1865, Earl R. became prime minister the second time. In 1866 he with Gladstone introduced a reform bill which was rejected, and his ministry resigned. Thenceforward Earl R. remained an unofficial member of the liberal party in the house of lords.

RUS'SELL, John Scott: 1808–1882, June 8; b. Vale of Clyde, Scotland: naval architect. He was educated in the universities of Edinburgh, St. Andrews, and Glasgow; settled in Edinburgh and engaged in building river and canal steamboats; became manager of the

large ship-building yard at Greenock, Scotland; received the gold medal of the Royal Soc. of Edinburgh for introduction of the wave system in steamship construction; and 1844 removed to London and began building the largest class of steamships. He built the *Great Eastern;* was an original promoter of the London Exhibition 1851; was a founder and became vice-pres. of the Institution of Naval Architects; was vice-pres. of the Institution of Civil Engineers and member of several scientific bodies; and published several treatises on naval architecture and technical education.

RUS'SELL, WILLIAM: 1798, Apr. 28—1873, May 17; b. Glasgow: educator. He was educated in the Univ. of Glasgow; came to the United States and became principal of an acad. in Savannah 1819; was instructor in the New Haven grammar school 1822–28; taught classes in elocution in Harvard, Boston, Andover, and Germantown; edited *The American Journal of Education* 1826–29; established a teachers' institute in N. H. 1840; removed it to Lancaster, Mass., 1853; and spent the remainder of his life lecturing before teachers. He published several text-books.

RUS'SELL, WILLIAM, Lord: one of the noblest martyrs of English liberty: 1639, Sep. 29—1683, July 21; son of William, fifth earl. He was educated at Cambridge; passed some years at Augsburg and other places on the continent, and returned to England at the Restoration. 1678–9 he was returned to parliament for the county Bedford. His first public act was worthy of his subsequent career: he inveighed against the corruption of the Cabal, the influence of France, the dishonorable commencement of the war with Holland, and the fraud practiced on the bankers. He was ever afterward conspicuous wherever the evil designs of the court could be traversed, or the cause of constitutional liberty befriended. He appeared publicly in the king's bench at Westminster Hall 1680, June 16, and presented the Duke of York as a recusant. He also carried up to the house of lords the bill of exclusion against the duke, at the head of more than 200 members of the commons. This bill, setting forth that the Duke of York was a Papist, declared him incapable of succeeding to the crown (see ROMAN CATHOLIC EMANCIPATION ACTS). The king and the duke determined to be revenged on R. and the other leaders of the whig party. Charged as participators in the Rye-house Plot (q.v.), Lord R., the Earl of Essex, and Algernon Sidney were arrested. R. was arraigned 1683, July 13, at the Old Bailey, for high treason. Infamous witnesses easily satisfied a packed jury. As they were about to withdraw, the prisoner said: 'I call Heaven and earth to witness that I never had a design against the king's life.' But the jury pronounced the fiat that condemned R. to the block, and the sentence of death for high treason was forthwith pronounced. Some even of the tory ministry ventured

to plead in his favor, but in vain. To satisfy his aged father, and at the earnest request of his afflicted wife, R. himself petitioned the king. There is reason to believe that Charles was disposed to relent, but that the Duke of York insisted upon the prisoner's death. The simple relation of his last hours, with their saintly calm and their heroic dignity, by Bp. Burnet, his intimate friend and companion, is justly considered one of the most pathetic passages in history. This murder of R., perpetrated for the most unconstitutional end by the most unconstitutional means, followed by that of Sidney, rendered the despotism of the Stuarts odious, and led, in the next reign, to the overthrow of the family. R. left a name to be remembered and revered wherever truth has a sanctuary, or liberty a shrine.—His attainder was annulled after the revolution. His eldest son was Wriothesley, second Duke of Bedford.

RUSSELL, William Clark: English novelist: 1844, Feb. 24— ——; b. New York; son of Henry R., author of *Cheer, Boys, Cheer*. He received education at Winchester, Eng., and in France; went to sea in the Eng. merchant service when about 14 years of age; voyaged to Australia, India, and China, and after about 7 years returned to England and began to write stories of the sea, his writings at once finding popular favor. The first was *John Holdsworth, Chief Mate* (1874), followed by *The Wreck of the Grosvenor; The Little Loo; A Sailor's Sweetheart; An Ocean Free Lance; A Sea Queen; The Lady Maud; Jack's Courtship; The Strange Voyage; The Death-Ship; A Frozen Pirate; Marooned; An Ocean Tragedy; My Shipmate Louise*, etc. He was a member of the staff of the London *Daily Telegraph*, his connection ceasing 1887.

RUSSELL, William Eustis: lawyer: 1857, Jan. 6— 1896, July 16; b. Cambridge, Mass. He graduated at Harvard 1877, at the Boston Univ. Law School 1879, and was admitted to the bar 1880. After serving his native city in various public offices, he was elected gov. (dem.) of Mass. 1890, and again 1891, and 92. His success in these elections was remarkable as involving the overturning a republican majority long accounted sure. In 1894 he was appointed by Pres. Cleveland a member of the board of Indian Commissioners. His death was greatly lamented.

RUS'SELL, William Howard, ll.d.: journalist: b. Lilyvale, Ireland, 1821, Mar. 28. He was educated privately and at Trinity College, Dublin; received a staff appointment on the London *Times* 1843; was called to the bar 1850; and while in successful practice was induced to accompany the British troops to the seat of war with Russia, as special correspondent of the *Times*. He was an eye-witness of the movements immediately preceding the beginning of the Crimean war, as well as of the decisive events in that struggle; and wrote graphic and thrilling letters to the *Times* on the historic scenes about him. In 1856 he described the coronation of the

Czar Alexander II. in Moscow; 1857 took part in the movement for suppressing the mutiny in India, and received the Indian war medal with the Lucknow clasp; 1860 established in London the *Army and Navy Gazette*, of which he is still owner and editor; 1861 came to the United States as war correspondent of the *Times*, and described the first battle of Bull Run; 1866 was attached to the Austrian army in the war with Prussia; 1870 accompanied the staff of the crown-prince of Prussia in the war with France; 1875-6 was honorary private secretary to the Prince of Wales, whom he accompanied to India, Egypt, Constantinople, the Crimea, etc.; and 1879 was with Lord Wolseley in his s. African campaign. He has received numerous medals and decorations for his services as war correspondent; and has published *Letters from the Crimea* (1855-6); *Diary in India; My Diary North and South; Canada: Its Defences; Rifle Clubs and Volunteer Corps; The Adventures of Dr. Brady; My Diary in the East; The Prince of Wales' Tour* (1877); *Hesperothen* (1882); *The Great War with Russia* (1895); *A Retrospect of the Crimea; Toleben's Sebastopol;* etc. He was knighted in 1895.

RUSSELL OF KILLOWEN, Charles, Lord: English jurist: 1832, Nov. 10—1900, Aug. 10; b. near Newry, Ireland; descended from Roman Catholic ancestors, and the only one of five brothers who did not enter the service of the church. After studying for a while in the office of an attorney at Newry, he went to London (1851), where he gained a livelihood by press-reporting in the house of commons. He was called to the bar at Lincoln's Inn 1859, and gained prominence as an advocate. In 1872 he was appointed a queen's counsel; in 1880 he entered parliament, and became solicitor-general and attorney-general. He warmly advocated the cause of Irish home-rule. He was engaged as an advocate in the Colin Campbell divorce case, the Crawford divorce case, the Tranby Croft baccarat scandal case, and defended Mrs. Maybrick. He was knighted 1886; was appointed a Lord of Appeal in ordinary with a life peerage 1894, and in the same year was made Lord Chief Justice of England. He presided at the trial of Dr. Jameson for raiding the Transvaal. He visited the U. S. 1896, and delivered an address on international arbitration before the American bar association, at Saratoga Springs, N. Y.; and was British arbitrator on the Venezuelan Boundary Arbitration Tribunal 1899.

RUSSELL'S VIPER: one of the largest and most venomous serpents (*Daboia russelli*) of the East Indian region; justly dreaded throughout southern and eastern India, Ceylon, Burma, and Siam. It may reach a length of five feet, and is yellowish-brown with three longitudinal series of black, light-edged rings, which sometimes encircle reddish spots. It is known also as chain-viper, tic-palonga (Ceylon), etc., and is regarded by experts as

the most deadly in India, but fortunately it is neither as numerous nor as easily provoked as the cobra. According to Fayrer it is nocturnal in its habits, sluggish and does not readily strike unless irritated, when it bites with great fury; moreover its loud hissing when disturbed is likely to give one sufficient warning to enable him to jump out of reach of its fangs. It is said to kill many grazing cattle. The action of its poison resembles that of the rattlesnake, but gives rise to hemorrhagic extravasations from the kidneys and various other organs.

RUS'SELLVILLE: Ark., town, county-seat of Pope co., on the St. Louis, I. M. & S. and the Dardanelle & R. railroads; about 80 m. n.w. of Little Rock. It is in an agricultural region in which the chief product is cotton. The lumber interests are quite important. The chief manufactures are cotton and lumber products, flour, dairy products, and agricultural implements. The two banks, one national and one state, have a combined capital of $80,000. Pop. (1900) 1,832; (1910) 2,936.

RUSSELLVILLE: Ky., city, county-seat of Logan co., on the Louisville & Nashville railroad; about 25 m. w.s.w. of Bowling Green and 52 m. n. by w. of Nashville. It is in an agricultural region in which tobacco is one of the chief products. The chief manufacturing establishments are flour mills, tobacco factories, wagon and carriage works, and furniture factories. It contains the Logan Female College (M. E. S.), established in 1867, the Bethel College (Baptist), founded in 1854, public schools and a public library. The three state banks have a combined capital of $175,000. Pop. (1900) 2,610.

RUSSELLVILLE, ENGAGEMENT AT: late in 1864, Oct., Col. J. B. Palmer, 58th North Carolina, moved from North Carolina into East Tennessee to co-operate with Gen. Vaughn, and was ordered to take position in rear of Russellville. He had scarcely taken position when Vaughn's brigade, defeated at Morristown, swept past him in great disorder. He opened fire upon Gillem's pursuing troops, checking them and enabling Vaughn to rally. Gen. Gillem, 1864, Nov. 8, hearing that Gen. Breckinridge was advancing to reconquer East Tennessee, fell back to Bull's Gap on the 10th, where he was attacked on the 11th, 12th and 13th. Gillem fell back toward Russellville, where on the 14th his rear was attacked by Breckinridge. His men became panic-stricken, and retreated. He had 41 killed and wounded, and 200 of his men were captured.

RUSSET, a. *rŭs'sĕt* [OF. *rousset,* russet: F. *roux;* It. *rosso*—from L. *russus,* red]: of a reddish-brown color; home-spun; coarse; rustic: N. a country dress: V. to give to anything a reddish brown color. RUS'SETING, imp. RUS'SETED, pp. RUS'SETY, a. *-sĕt-ĭ,* of a russet color. RUS'SET, or RUS'SETING, n. a variety of apple having a rough skin and russet color.

RUSSIA, *rŭsh'a* or *rŭsh'ĭ-a*, EMPIRE OF: dominion and territory extending over a large portion of the northern regions of the globe; including eastern Europe, all northern Asia, and a part of central Asia; lat. 38° 30′—78° n., long. 17° 19′ e.—190° e. (170° w.). The empire is bounded n. by the Arctic ocean; e. by the North Pacific ocean and the Chinese Empire; s. by the Black sea, Turkey in Asia, the Caspian sea, Persia, Afghanistan, Turkestan, and the Chinese Empire; w. by Roumania, Austria, Prussia, the Baltic sea, and Sweden. Its territory is more than twice as large as all Europe; and its area is one-sixth of the land surface of the globe, and nearly one twenty-fourth of the land superfices of the planet. Russian America, the n.w. portion of N. America which formerly belonged to Russia, was sold to the United States 1867. See ALASKA.

The southern frontier is indefinite, having never remained unaltered for so long as 20 years, and its southward advance has continued till the present time in Asia Minor, and in Asia beyond the Caspian toward the Pamir plateau. Bokhara and Khiva (112,000 sq.m., pop. 3,200,000), though recognized as vassal khanates, are mere dependencies of Russia. The eastern portion of the southern boundary, though less vague, is only approximately defined. On the western frontier also a gradual advance of Russian influence is evident in the direction of eastern Mongolia. Russia has no oceanic islands, having abandoned those that were included in the empire in the 18th c.: the Russian islands are mere appendages of Russian mainland—such as the Aland archipelago, etc., in the Baltic sea; Nova Zembla and the New Siberian archipelago in the Arctic sea; the Shantar islands and Saghalin in the Sea of Okhotsk. The Aleutian Isles were ceded with Alaska to the United States 1867, and the Kurile islands to Japan 1874.

The vast continental territory, lying almost entirely in the cold or the temperate zones, is in most of its extent sparsely peopled—having about one-fourteenth the pop. of the globe. It comprises the following divisions—with pop. in 1897: (1) *European Russia*—Provinces 1,902,202 sq.m., pop. 94,215,415—Poland, 49,159 sq.m., pop. 9,455,943; Finland, 144,255 sq.m., pop. 2,595,778; total of European Russia, 2,095,616 sq.m., pop. 106,264,136. (2) *Russia in Asia*—Caucasus, 86,661 sq.m., pop. 3,732,556; Central Asia, 1,548,825 sq.m., pop. 7,721,684; Siberia, 4,833,496 sq.m., pop. 5,727,090; total of Asiatic Russia, 6,564,778 sq.m., pop. 22,697,469. Total, about 8,660,395 sq.m., pop. (1908) about 147,000,000.

The following table exhibits the details of the census which was taken over the whole of the Empire in 1897, with the exception of the Grand Duchy of Finland—concerning the area and population of the various political and geographical divisions of the Empire of Russia:—

RUSSIA.

AREA AND POPULATION OF RUSSIAN EMPIRE.

Province.	Area: English square miles.	Pop.	Density per square mile
1. European Russia:			
Archangelsk	331,640	347,589	1
Astrakhan	91,327	994,775	11
Bessarabia	17,619	1,933,436	113
Chernigoff	20,233	2,321,900	115
Courland	13,535	672,634	64
Don, Region of	63,532	2,575,818	41
Ekaterinoslaf	24,478	2,112,651	86
Esthonia	7,818	413,724	54
Grodno	14,931	1,617,859	109
Kaluga	11,942	1,185,726	99
Kazan	24,601	2,291,058	89
Kieff	19,691	3,576,125	181
Kostroma	32,490	1,420,228	44
Kovno	15,692	1,549,444	100
Kursk	17,937	2,396,577	134
Kharkoff	21,041	2,509,911	119
Kherson	27,523	2,732,832	100
Livonia	18,158	1,300,640	74
Minsk	35,293	2,156,123	61
Moghilev	18,551	1,708,041	92
Moscow	12,859	2,433,356	189
Nijni-Novgorod	19,797	1,600,304	81
Novgorod	47,236	1,392,933	33
Olonetz	57,439	366,715	7
Orel	18,042	2,054,749	114
Orenburg	73,816	1,609,388	22
Penza	14,997	1,491,215	99
Perm	128,211	3,003,208	24
Podolia	16,224	3,031,513	187
Poltava	19,265	2,794,727	145
Pskoff	17,069	1,136,540	68
Ryazan	16,255	1,827,539	113
St. Petersburg	20,760	2,107,691	123
Samara	58,321	2,763,478	46
Saratoff	32,624	2,419,884	74
Simbirsk	19,110	1,549,461	81
Smolensk	21,638	1,551,068	72
Tamboff	25,710	2,715,453	106
Taurida	24,497	1,443,566	62
Tula	11,954	1,432,743	120
Tver	25,225	1,812,825	73
Ufa	47,112	2,220,497	47
Vilna	16,421	1,591,912	98
Vitebsk	17,440	1,502,916	89
Vladimir	18,864	1,570,733	84
Volhynia	27,743	2,997,902	109
Vologda	155,498	1,365,587	9
Voronej	25,443	2,546,255	109
Vyatka	59,329	3,082,788	52
Yaroslav	13,751	1,072,478	78
Sea of Azov	14,520	.....	....
Total, Russian Provinces	1,902,202	94,215,415	51
2. Poland:			
Kalisz	4,392	846,719	194
Kielce	3,897	763,746	196
Lomja	4,667	585,781	144
Lublin	6,501	1,159,463	177
Piotrkow	4,729	1,409,044	297
Plock	4,200	556,877	153
Radom	4,769	820,363	171
Siedlce	5,535	775,316	140
Suwalki	4,846	604,945	127

AREA AND POPULATION OF RUSSIAN EMPIRE—*Continued*

Province.	Area: English square miles.	Pop.	Density per square mile.
Warsaw	5,623	1,933,689	286
Total, Poland	49,159	9,455,943	193
3. Grand Duchy of Finland:			
Abo-Björneborg	9,333	430,194	47
Kuopio	16,499	305,166	22
Nyland	4,584	276,335	61
St. Michel	8,819	186,478	28
Tavastehus	8,834	285,281	40
Uleaborg	63,957	268,226	4
Viborg	13,530	394,412	33
Vasa	16,105	446,772	30
Lake Ladoga	3,094	.....	....
Finland	144,255	2,592,778	20
Total European Russia	2,095,616	106,264,136	51
4. Russia in Asia:			
Kuban	36,441	1,922,773	54
Stavropol	23,398	876,298	38
Terek	26,822	933,485	35
Northern Caucasia	86,661	3,732,556	43
Baku	15,095	789,659	55
Black Sea	2,836	54,228	....
Daghestan	11,332	586,636	58
Elizabethpol	16,721	871,557	52
Erivan	10,075	804,757	101
Kars	7,308	292,498	43
Kutais	13,968	1,075,861	54
Tiflis	15,306	1,040,943	62
Zakataly	1,541		
Trans-Caucasia	94,182	5,516,139	64
Caucasus	180,843	9,248,695	51
Akmolinsk	229,609	678,857	3
Semipalatinsk	184,631	685,197	4
Turgai	176,219	453,123	3
Uralsk	139,168	644,001	4
Lake Aral	26,166	.....	....
Kirghiz Steppe	755,793	2,461,278	3
Samarcand	26,627	857,847	30
Ferganah	35,654	1,560,411	43
Semirechensk	152,280	996,107	7
Syr-Daria	194,853	1,479,848	7
Turkestan	409,414	4,888,183	12
Trans-Caspian	214,237	372,193	2
Caspian Sea	169,381	.....	....
Total Central Asia dominions	1,548,825	7,721,684	5
Tobolsk	539,659	1,438,484	3
Tomsk	331,159	1,929,092	6
Western Siberia	870,818	3,367,576	4

AREA AND POPULATION OF RUSSIAN EMPIRE—*Continued*

Province.	Area: English square miles.	Pop.	Density per square mile
Irkutsk	287,061	506,517	2
Transbaikalia	236,868	664,071	3
Yakutsk	1,533,397	261,731	2
Yeniseisk	987,186	559,902	1
Eastern Siberia	3,044,512	1,992,221	7
Amur	172,848	118,570	9
Primorskaya	715,982	220,557	3
Amur Region, about	888,830	339,127	3
Sakhalin	29,336	28,166	1
Total, Siberia	4,833,496	5,727,090	1
Total, Asiatic dominions	6,564,778	11,697,469	4
Russians in Finland, Bokhara, Khiva and in the Navy abroad	.....	42,909	....
Grand Total, Russian Empire	8,660,395	129,004,514	15

The Russian Seaboard.—The northern shores of the Russian territories are deeply indented by the Arctic Ocean. The White Sea (q.v.), an immense arm of the Arctic Ocean, penetrates 350 m. into the mainland, and is sub-divided into the gulfs of Onega and Archangel or Dwina. The other chief inlets on the n. of R. are the Kara Sea and the gulfs of Obi and Yenisei. W. from Nova Zemla (usually, but less correctly, Zembla), the Arctic Ocean is navigable for three months of the year; e. from that island, the sea, even at the mildest season, is encumbered with floating icebergs. The chief islands in this ocean are the Kolguef, Waigatz, Nova Zemla, and Spitzbergen Isles. The e. shores of R. are washed by the Pacific, subdivided into the Behring, Okhotsk, and Japan seas; since 1898 by the gulfs of Siao-Tung and Corea, bounding the Siao-Tung peninsula. On the s. are the Black Sea (q.v.) and the Sea of Azov (q.v.), the latter communicating with the former by the Strait of Kertch, and so shallow that it is navigable for small craft only. Of the Caspian Sea, R. commands the whole, except the s. shore, which belongs to Persia. The n. and e. banks of the Caspian are seats of the chief fisheries of the empire. On the n.w. of R. are the Baltic Sea, with the gulfs of Riga, Finland, and Bothnia; and in these waters, the islands of Aland, Esel, and Dago belong to the empire. The freezing of the water near the shores of the Baltic

prevents its navigation during five months of the year, though a few ports are accessible through the whole year. From its easy communication with the most fertile governments of the interior, and as sustaining chiefly the commerce of R. with other parts of Europe and with America, the Baltic is of the highest commercial importance.

Surface, Hydrography, and Soil.—European R. consists of a vast plain bordered with mountains. On the e. are the Ural Mountains (q.v.), a broad range of no great elevation, ending on the n. on the shores of the Arctic Ocean, and on the s. in a range of elevated plains on the left bank of the Volga. On the s.e. of the great plain is the lofty range of the Caucasus (q.v.), crossed by the Pass of Derbend and the so-called Military Georgian Road. The Crimean Mountains, continuation of the Caucasian chain, rise 5,000 ft. in their highest summit. The districts in s.w. R., between the Vistula and the Pruth, are covered by hilly ranges from the Carpathian Mountains (q.v.), in Poland, known as the Sandomir Mountains. The Finland Mountains, on the n.w., are ranges of granite rocks, embracing numerous lakes, and not higher than 600 ft. The Alaunsky table-land, which connects itself with the Ural Mountains by a chain of hills, lat. about 62° n., is the key to the configuration of European Russia. From this table-land of about 1,200 ft. elevation, the country slopes gradually in four directions —n. to the Arctic, n.w. to the Baltic, s. to the Black, and s.e. to the Caspian seas. The sloping country n. of the Alaunsky heights is called, from its e. and w. limits, the Ural-Baltic table-land; that s. of the same dividing heights is called, for like reason, the Ural-Carpathian table-land. The Alaunsky heights form the great watershed, and regulate the course of all the great Russian rivers. To the n. they throw off the Petchora, the N. Dwina, and the Onega; to the s. the Dniester, Bug, Dnieper, Don, and Kouban; to the s.e. the Volga, with its great affluents, the Oka and Kama. The W. Dwina, the Niemen, and the Vistula fall into the Baltic Sea. For the important rivers of R., see their several titles. At the foot of the n.w. slope from the central terrace is the lake-country of European R., and the great lakes (see separate titles) are Ladoga, Onega, Ilmen, Peipus, and Pskov.—The plain of European R. naturally divides itself into three tracts or zones, differing in nature and quality of soil. The n. zone extends between the Arctic Ocean and the Ural-Baltic table-land, the middle zone between the Ural-Baltic and the Ural-Carpathian table-lands, and the s. zone between the Ural-Carpathian table-land and the Black and Caspian seas. The soil of the n. zone is marshy, and the climate inclement. In its middle part, between the rivers Onega and Mezen, especially along the banks of the N. Dwina, are forests of fir-wood and large tracts of fodder-grass. Toward the e. of this tract, the woods disappear, and vast marshes, frozen the greater part of the year, cover the country.

The middle zone reaches s.w. to the govt. of Volhynia and s. Poland, and n.e. to the Ural Mountains. In the w. it consists of an extensive hollow, covered with woods and with marshes, the chief of which are those of Pinsk (q.v.). In the middle of this zone, the soil is partly heavy and covered with mold, and toward the n. sandy. Beyond the Oka, luxuriant meadows abound; and on the e., beyond the Volga, this tract forms an extensive valley, covered with a thick layer of mold, abounding in woods, and rising into hills in the vicinity of the Ural range. The s. zone consists of steppes extending along the shores of the Black and Caspian seas. The steppes of the Black Sea have mostly a moldy soil, covered with grass; but in the s.e. shifting sands and salt-marshes predominate. The steppes of the Caspian consist of sand, salt-marshes, and salt-lakes—the Elton Lake, yielding nearly 4,000,000 poods (about 1,290,000 hundredweights) of salt annually, being the most remarkable.

Constitution and Administration.—The govt. is an unlimited monarchy, whose head is the tzar or emperor (written commonly *czar*), who unites in himself every authority and power—that is to say, is the head of the military, the legislative, and the judicial systems, and is also the ecclesiastical chief of the orthodox Greek Church. The order of succession is by primogeniture, hereditary in heirs-male, and in females in default of males. The expenses of the imperial house amount to about $7,500,000 annually; the private property of the imperial family, yielding about $5,000,000 annually, is excluded from the budget. Every military or civil officer of the crown is required to take an oath of allegiance. The Council of State is the highest branch or board of the executive, and comprehends the legislative, judicial, and administrative powers. The pres. (some member of the imperial family) and members—among whom are always included the ministers of the crown—are appointed by the emperor. A sec. of state, whose duty it is to report the opinion of the council to the emperor, is attached to this body. The estimates of expenditure and income, and every proposition introducing an addition to, or a modification of, the laws, is considered and revised by this council, which is divided into three sections: 1. Law; 2. Civil and Ecclesiastical; 3. Economy and Finance. The main function of the council is in superintending the general administration, and watching over the execution of the laws: it has only a consultative voice; the decision rests with the emperor. The second of the great boards of govt. is the Senate, whose functions are partly deliberative and partly executive. It is the high court of justice for the empire, controlling all inferior tribunals; and besides its legal duties, it examines into the state of the public revenue and expenditure. The senate is divided into seven committees or departments, of which five sit at St. Petersburg and two at Moscow. The third college is the Holy Synod,

superintending the religious affairs of the empire. its decisions have no force till approved by the emperor. The fourth great board of govt. is the Committee of Ministers, the highest administrative body: it is in nine departments, respectively managing the Court; Foreign Affairs; War; the Navy; the Interior; Public Instruction; Finances; Crown Domains; Public Works: also it has a general board of control. All these great boards centre in the private cabinet of the empire. Except the departments of foreign affairs and the imperial court, all these branches of the central administration are represented in the provinces. In 1904, for purposes of local govt., the empire was divided into the nine general govts. of Finland, Poland, Wilna, Kieff, Moscow, the Caucasus, Turkestan, the Steppes, and Irkutsk. each under a gov.-gen. with full civil and milit. powers. The Amur province and the Kwang-Tung territory, obtained from China in 1898, were constituted a viceroyalty in 1903. The general governments were subdivided into 78 governments, each under a civil governor, and 17 provinces, each under a milit. gov. The govts. were further subdivided into districts and, in Europe R., into communes and cantons. A new legal system, including oral testimony, trial by jury, and publicity of courts, was introduced 1864. By the Russian law, capital punishments are inflicted only for high treason. The severest punishments inflicted for violations of the law (see KNOUT) are labor in the galleys, in the public works, deportation to the mines of Siberia, etc. The audacity in recent years of the revolutionary party known as Nihilists (see NIHILISM) has caused increased rigor and frequency of political punishment. Repeated and fatal attempts on the life of high officials, and the acquittal by a jury of one of the most notable assassins, led 1878 to withdrawal of trials for political offenses from juries: such trials are now conducted by courts-martial.

Distinctive Rank of Classes.—The nobility occupy the highest place in the social scale, have many special privileges, e.g., freedom from poll-tax, and form in every province a separate body, headed by a marshal, chosen by and from themselves. Till 1871 they were also free from the conscription. Functionaries, officials, artists, and clergy possess almost as many privileges as the nobility. In 1868, by an important law, the clerical character was declared no longer hereditary, and the sons of the secular clergy, hitherto bound to some ecclesiastic or monastic service, were set free to choose their own career. The next class is that of the merchants. The burghers and peasants constitute the lowest class, and are subject to claims of service and to personal taxation. Each class has, to a certain extent, the right of self-administration in its own affairs: each apportions its taxes, and chooses some of its own functionaries. The recent emancipation gave freedom to 20,000,000 peasants or serfs, who, prior to 1861, being governed exclusively by their owners, had very limited civil rights. Com-

munal govt. is the fundamental principle of all the rights of the peasant class. In general, the lands allotted to the peasants are not their individual property, but belong to the commune, and are shared among all its members.

National Debt.—The national debt must be regarded as divided into two parts, one representing loans made abroad; the other, loans made at home. Its total amount was reported in 1902 at $3,450,535,000, of which $1,250,000,000 represented expenditures for railroad purposes, and the net annual interest exceeded $150,000,000. Liabilities of national treasury besides interest aggregated over $1,297,000,000. The treasury held partly in cash and partly in debts, over $246,500,000. The fixed charges against the treasury holdings in the order of amounts were, redemption operations, railroads, military establishment, advances for specific purposes, debt of the Nobility bank, and miscellaneous. Immediately before the Crimean war the nat. debt was nearly $750,000,000, which was increased in 1856-1902 by $2,700,535,000. Since 1899 R. rouble has been worth .515 in U. S. gold.

Revenue and Expenditure.—The sources of revenue are known officially as ordinary and extraordinary, and the purposes of expenditure as ordinary and extraordinary. The ordinary sources of revenue are taxes on lands, licenses, and incomes; tax on drink; on tobacco; on sugar; receipts from stamps; from customs; from registry fees; from other indirect taxes; from mining and mint royalties; post-office and telegraph service; domains and forests; miscellaneous sales; and other sources. The ordinary purposes of expenditure are interest on public debt; financial administration; the army; interior dept.; the navy; roads and communications; domains; public education; judiciary; support of the holy synod; imperial court; and other purposes. The budget estimate for 1903 placed the ordinary revenue at $948,516,339, the ordinary expenditure at $940,202,614, the surplus at $8,313,724, and the extraordinary expenditure at $95,631,121. It was expected that the latter then would be met by the surplus, the extraordinary revenue of $1,250,000, and the treasury reserve of $86,067,397. Among the extraordinary expenditures authorized were $10,460,511 for the Siberian railroad and $72,597,290 for other railroads. Reports showed that in 1902 the grain production was the largest in ten years and the value of exports exceeded that of the imports by $150,000,000.

Army.—The regular standing army dates from the close of the 17th c.: before that time, milit. levies were raised for longer or shorter periods. Till lately the army was raised by conscription; but 1870 an imperial ukase announced the principle of universal liability to milit. service, and another 1874 reorganized the entire milit. system. There is an annual conscription to which all men who have completed their 21st year, and are not physically incapacitated, are liable: substitution is prohibited. The period of service in the army is 23 years, 5 in active service, 18 in the army of reserve. During the

latter period, the soldier is liable to service only in time of war. To enable the educated classes to free themselves from compulsory conscription, young men, sufficiently educated, may enter on a short period of service from their 17th year. The Cossacks now form in time of peace a perfectly organized body of men, easily attached to the cavalry division in time of war: in peace they have 21 regiments and 8 horse-batteries, increased in war to 62 and 22 respectively. The grand duchy of Finland has no military system of its own. The Russian army, on the peace footing, consisted 1902 of about 42,000 officers and more than 1,000,000 men. In war the strength is approximately 75,000 officers, 4,500,000 men and 562,000 horses.

Navy.—The Russian boundaries were first advanced to the sea under Peter the Great, and from the genius of that monarch the Russian navy sprang. Besides the naval depots on the Baltic, the Black, and the Caspian seas, there are naval establishments also at Vladivostok and Port Arthur (see HISTORY following). In 1875 Russia had 137 war-vessels in the Baltic sea, 31 in the Black sea, and 55 on other waters. In 1903 there were 381 ships built or building, 24 being battle ships and 4 armored cruisers.

Religion and Churches.—Under certain limitations, toleration of all religions which do not violate public morality or good order exists in Russia, and not to profess the orthodox Greek faith, the national religion, does not disqualify as regards civil rights. But the law does not allow those who already belong to the established faith to secede from it; and if, in a household, either parent be a member of the Greek Church, all the children must be brought up within that communion (see RUSSIAN CHURCH). The emperor is head of the church, whose affairs he directs by means of a synod of the chief prelates (see RUSSIAN CHURCH). There are no trustworthy figures concerning the numbers of adherents of different creeds, but the preliminary returns of the last census (1897) gave the following estimates: Græco-Russian or Orthodox Catholic, 87,384,480; Dissenters, 2,173,738; Roman Catholic, 11,420,927; Protestants, 3,743,209; other Christians, 1,221,511; Mohammedans, 13,889,421; Jews, 5,189,401; and other religions, 645,503. The national church has 3 Metropolitan, 14 archbishops, 48 bishops, 66,146 churches with 59,063 priests and deacons, 718 cathedrals, and 785 monasteries (including 289 nunneries), with 8,084 monks, 9,216 nuns, and 35,792 aspirants.

Population.—The pop. is spread irregularly over the surface. In European Russia its average is less than 40 per English sq.m.; in the Caucasus, more than 28; in Siberia, $\frac{3}{4}$; in Poland, 144; and in Finland, 14 per English sq.m. These figures, however, cannot be taken as a correct illustration of the actual distribution of the masses over the enormous surface of the country; for, on comparison, the degree of density of pop. in Euro-

pean R. is found to vary greatly in the different govts. The government of Moscow contains 166 inhabitants per Eng. sq. m.; while that of Archangel contains only ¾. The central and s.w. govts. of this part of the empire are the most densely peopled. The town residents are 9½ per cent. of the whole pop. of European R.; 7½ per cent. of that of the Caucasus; and 5 per cent. of that of Siberia. Russian society is divided into five classes, and of these the nobility form 1·49 per cent.; clergy, with their families, 1·01 per cent.; burgesses (*tiers état*), 8·60; peasants, 82·55; military, 6·35 per cent. Irrespective of Asiatic R., this empire comprises in Europe a greater variety of races than any other European state. It is not, however, like Austria, a composite community, speaking various idioms, and having different physical characteristics and political interests. In European R., the predominant race is the Slavonian, and the Russian 'element' and language prevail almost universally. The 85,282,101 Russians who inhabit Europe are divisible into—1. Great Russians, inhabiting central Russia. 2. Little Russians, located in the southwest. To the latter may be added the Cossacks, who are spread along the rivers Don, Kouban, Terek, Ural, Tobol, the Lake of Baikal, and the Amur. 3. White Russians, in the western provinces. The other Slavonic races are Poles, in the kingdom of Poland, and partly in the west provinces (where they form only 10⅖ per cent. of the population); Servians and Bulgarians, in Bessarabia and New Russia. The Finnish race, which occupies, under different names, the north and northeast of European Russia, and the northwest of Siberia, has in great part adopted Russian language and manners. The Lithuanians and Letts dwell mostly between the Niemen and Dwina. The Turkish Tartarian race, in the southeast, and partly in Siberia, comprises Tchuvashes, Tartars of Kazan, Kirghis, etc. The Mongols comprise Kalmucks and other races in the southeast of European Russia and in the east of Siberia. Besides these races, there are Roumains and Walachs, in Bessarabia and New Russia; Persians, Kurds, Armenians, etc., near the Caspian Sea; Germans, distributed over the whole empire, but found in the greatest numbers in the Baltic provinces; Swedes, in Finland; Greeks, in the south; Bohemians—i.e., Gypsies—chiefly in Bessarabia; Jews, mostly in Poland and the west provinces; Caucasians; Samoyedes, in the north of R.; and many other tribes scattered over eastern Siberia.

Climate.—R., in its vast extent, presents great varieties of climate. At Archangel, the mean temperature of the year is 32° F.; at Yalta, in the Crimea, 52°; and at Kutais, in the Caucasus, 58°. Consisting of an immense area of dry land, the climate of the empire is essentially continental; and the climate of localities in its interior is much more rigorous than that of places on the w. shores of Europe in the same latitudes. The mean temperature of Edinburgh and Christiania is higher than

that of Moscow and Kazan. The rigor of the climate of the empire increases not only with the latitude, but also with advance eastward; thus, the mean winter temperature of the town of Abo, in the Gulf of Bothnia, is the same as that of Astrakhan—viz., 23° F.; though Abo is in lat. 61°, and Astrakhan in lat. 47°, or 14° nearer the equator. The difference of the mean summer temperature under the same latitudes is, on the contrary, not very considerable. The isothermal line of Astrakhan (60° F.) passes through Lublin in Poland and Ekaterinoslav. In the e. the maximum heat is even greater thar in the w.; and such heat-loving plants as the watermelon are grown more successfully in s.e. R. than in w. Europe, under the same latitude. The dryness of the atmosphere increases in the direction from n.w. to s.e. On the banks of the Baltic, the average number of rainy and snowy days is 150, and the annual rainfall 20 inches, while near the Caspian the number of such days is 70, and rainfall only 4 inches. The climate of R. is in general healthful; but there are several places where diseases seem localized—e.g., the shores of the Frozen Ocean, where scurvy is common; the marshes along the Niemen and Vistula, where the Plica Polonica (q.v.) is the chief disease; and the marshy lands on the Black, Azov, and Caspian seas, where ague always prevails.

Manufactures.—Manufacturing industry in R. may be said to date from the reign of Peter the Great. Foreign manuf. goods are heavily taxed on importation.

Of the factories (exclusive of iron and other metal works), about a half are in the govts. of St. Petersburg, Moscow, and Vladimir. The metallurgical works are mostly in the govt. of Perm, and other e. govts. bordering on the Ural Mountains. Small handicraft manufacturing establishments abound in all the central govts., especially in the neighborhood of Moscow, where whole villages during the winter season are employed in some special industry, as weaving, tanning, fur-dressing, joiners' work, shoemaking, etc. The chief manufacture is spinning and weaving flax and hemp. Linen is very largely manufactured, chiefly in hand-looms; though the finer qualities are manufactured by power-looms, mostly in the govts. of Jaroslav and Kostroma, and the capitals. Hemp is manufactured into sail-cloth and ropes, largely exported. Woolen and worsted stuffs are made extensively, and the quantity is increasing. Fine cloths and mixed fabrics are made in the capitals, and in the govts. of Livonia and Tchernigov. Silk spinning and weaving are carried on in the factories of Moscow. In 1897 there were in European R. (without Poland and Finland) 30,029 manufactories of all kinds, employing 2,098,242 work-people; besides many small works, with not more than 5 workers each. Through the influence of the protective system, cotton spinning and weaving have been rapidly extended in recent years (the largest cotton-mill is at Narva, q.v.). The other

important branches of industry are tanning; next cutlery, made in the town of Tula, the Russian Sheffield, and in the govts. of Nijni-Novgorod, Vladimir, and Kostroma; and pottery and glass works, the former in the govt. of Moscow, the latter in that of Vladimir. The product of the textile industries 1897 was valued at $717,647,920; of metal industries at $542,368,750; of food manufactures, $499,049,320. The cotton industry proper is valued at $395,680,000 per year.

Commerce.—The Russian empire, including provinces varying widely in their natural and industrial resources, presents an extensive field for internal commerce, while the abundance of its products maintains a vast foreign trade. Of the internal commerce, far the more important, the extent and value cannot be given, from lack of statistical data. Moscow, in the centre of the industrial provinces of the empire, and the great depot for the wares that supply the trades of the interior, is the chief seat of the home trade. The other large trading towns are chiefly those on the banks of the great rivers. The goods yearly conveyed by the Volga alone amount to 200,000,000 roubles ($123,400,000). Owing to the distances between the great trading towns, fairs are still of great importance in Russia. The transactions of all the fairs in the empire amount to more than 300,000,000 roubles ($185,100,000); the chief are those of Nijni-Novgorod (q.v.), Irbit (q.v.), Kharkov (q.v.), Poltava (q.v.), and Kursk (q.v.).—The foreign trade consists mainly of export of raw products, and import of colonial and manufactured goods. The foreign trade by sea is five times greater than the trade by land; and of the latter the commercial transactions with Europe amount in value to ten times the Asiatic trade. One-third of the whole foreign commerce is transacted at St. Petersburg, one-ninth at Odessa, and one-fifteenth at Riga. The principal exports from R. are as follows, in the order of importance: wheat, rye, flax, linseed, oats, wood, hemp, wool, barley, cattle, maize; also unwrought metal, bristles, tow, leather, tallow, oil, fur, caviare. Chief imports: raw cotton, engines and machinery, wool, tea, cotton yarn, chemicals and drugs, coal and coke, wrought-iron, wine, metal wares, non-mineral oils, fruit; also petroleum, salt, tobacco, linen, indigo, glass wares, coffee, books. Raw sugar, formerly a chief import, has been reduced since 1878 to a very small quantity by development of the beet-sugar manufacture. The trade of the empire is carried on chiefly through its European frontier, through the Black Sea frontier of the Caucasus, and with Finland. In 1901 the total imports across the above frontiers had a value of $261,644,000, the principal receipts being, in their order, from Germany ($100,109,000), Great Britain ($51,609,500), U. S., France, Austria-Hungary, Finland, China, Egypt and Italy. The exports had a value of $364,825,000, and were principally to Germany ($84,706,500), Great Britain ($78,158,000), Netherlands, France, Finland,

Italy, Austria-Hungary, and Denmark. In 1902 the imports were $328,338,525; exports, $460,344,585. The trade with the U. S. in 1890-1903 showed a healthful development; in the former year the total was $14,072,687; in the latter, $26,889,208. The U. S. imports from R. in 1903 aggregated in value $9,282,396, and the exports to R. $17,606,812.

Geology and Mineral Products.—In 1841 the Brit. geologist Sir R. I. Murchison undertook a scientific journey to R. and the Ural Mountains: his geological investigations, with the paleontological researches of his colleagues, E. de Verneuil and Count Kayserling, have served as basis for further surveys. The oldest stratified rocks are the Silurian, on the s. shores of the Gulf of Finland, sinking below the Devonian strata, which run in two large branches—on the s.e. to Voronesh, and on the n.w. to Archangel—both overlaid to the e. by a still more extensive deposit of carboniferous rocks. The immense triangle between those layers and the Ural is occupied by the Permian system (except the n.e. extremity, covered by Jurassic beds), named by Murchison from its development in the govt. of Perm. S. of the s.e. Devonian branch extend deposits of the cretaceous period, and detached patches of the carboniferous formation. The latter contains, in R., only the older members of the group, up to the mountain limestone, in which are numerous but thin seams of coal, generally poor. The field along the Donetz forms an exception, and yields annually about 96,400 tons ($\frac{6}{7}$ of the total quantity raised in R.) of good soft coal and anthracite. The remaining s.w. and s.e. parts of the empire are covered by tertiary beds, more or less recent. The Ural Mountains present an outcrop of all the secondary and paleozoic formations down to the stratified gneiss and granite, which latter composes nearly the whole province of Finland, and skirts the middle course of the Dnieper. The Ural Mountains (q.v.), containing almost all the mineral riches of the country, are the principal seat of mining and metallurgic industry. They produce gold, platinum, copper, and iron of excellent quality, especially the iron, which is manufactured from magnetic ore. Emeralds, sapphires, amethysts, agates, rhodonites, rock-crystal, jasper, chrysoberyl, and black tourmaline are found, as well as diamonds of inferior quality. Gold is obtained by the washing process in Siberia (28,276 kilos 1899), the Urals (10,465 kilos), cent. Asia, and Finland; silver in Siberia (16,128 lbs.), and partly on the Caucasus; platinum in the Urals (3,600—4,600 lbs. annually); lead in connection with silver (19,416 cwts.); zinc only in Poland (89,650 cwts.); tin in Finland; copper in various govts., but in decreasing quantities; iron in the Moscow and Donetz basins, the w. provinces, Asiatic dominions, Poland, Finland, and the Urals; coal in the Donetz ($\frac{3}{4}$ of total product) and Moscow ($\frac{1}{5}$ product) basins, Poland, and Asiatic dominions (products 1900, 17,799,016 short tons) and salt (rock, spring, and lake) in many places in R. and Siberia (product 1899, 1,643,000 tons). Excel-

lent kaolin is found near Gluchov, in gov. of Tchernigov.

Agriculture and Products.—R. is an eminently agricultural country, though only a comparatively small portion (271,000,000 acres) is under cultivation. In the *central zone* (see above, at *Surface*), the soil is almost entirely black mold, extremely fertile, seldom requiring manure. The usual system of husbandry is the 'three-field system,' in which one-third of the land is always in fallow. In the s. and s.e. the 'fallow system' is in operation—consisting in raising three or four consecutive crops from the same land, and then letting it lie fallow five or six years, after which time it begins to grow feather-grass (*Stipa pennata*), considered a token of returning fertility. Husbandry, in general, has undergone great changes since the emancipation of the serfs, to whom a considerable portion of the land has been transferred in freehold. The landowners, deprived of their former right to the labor of their serfs, now find it more profitable to reduce the amount of their land in cultivation, or to grant portions of it in lease to the peasants, often in return for half the product. A great drawback to development of agriculture is lack of means of communication, consequently low price for corn in the locality in which it is grown. Fodder-grass is rarely cultivated, as sufficient fodder is afforded by the extensive natural meadows. The chief cereals are wheat —grown as far north as lat. 62°—rye, barley, and oats. Buckwheat and millet are grown in the s.; from these, but specially from rye, the staple food of the inhabitants is made. Hemp and flax are extensively cultivated; and the oil extracted from the seeds of hemp is an indispensable article of the peasant's household, as it is used for food during the fasts, which, taken together, extend over about half the year. Of flax, 15,000,000 poods (540,000,000 lbs.) are annually produced; of hemp, 7,000,000 poods (252,000,000 lbs.), and 3,000,000 poods (108,000,000 lbs.) of oil-seeds. After the famine of 1839, govt. introduced and afterward promoted cultivation of potatoes, of which the yearly product amounts to 55,000,000 *chetverts* (1 chetvert=5.77 imperial bushels). Tobacco crops cover 16,000 acres, and the amount produced is 2,500,000 poods (90,000,000 lbs.). Beet-root and maize are cultivated; and there are numerous vineyards in the Crimea, in Bessarabia, and along the Don. Gardening is an important industry, the products being cucumbers, onions, cabbages, and other vegetables and fruits. An area of 527,000,000 acres is covered with woods, but the quantity of timber, from which material the peasant supplies almost all his wants, is at present diminishing. The Russian builds his cottage with timber, heats his room with it, lights his house with firewood, makes his household utensils from the same material, as well as his cart, etc.; his shoes, and the mats which he uses for coverings, are made from the inner bark of the lime-tree. In the n. the forests occupy 90 to

95 per cent. of the whole surface; in the s., their proportion is much less. Coniferous trees are the chief in the n. districts; but in the central tracts, oaks, limes, maples, and ashes are the chief. Timber is the principal article of internal commerce, and is floated down the rivers from the well-wooded districts to their market.

Animals and Animal Products.—In the n. and central provinces, cattle are kept chiefly for supplying manure; but in other parts, cattle-breeding is an important industry. In 1900 there were 43,589,900 cattle, 70,647,300 sheep and goats, and 13,924,500 swine. Of horses, chiefly trotters are reared in breeding stables in the s. central govts.; the great majority of horses are from the half-wild studs of the Cossacks, Kalmucks, and Kirghis. The horses of Viatka, Kazan, and Finland are strong and hardy. In 1900 there were in Poland, Russian Asia and the Caucasus alone 25,961,700 horses. There are camels in s. R., reindeer in the n., and hogs and poultry in great abundance everywhere. A breed of the *Urus* (q.v.), a huge and rare animal not found in any other country, is preserved in a forest of the govt. of Grodno. Among the wild animals are (chiefly in the n.) the bear, wolf, elk, fox, and marten; on the n. coasts are the seal and walrus, and the eider-duck and other wild-fowl. The more expensive kinds of furs are procured from Siberia. The most important Russian fisheries are those of the Caspian and Black seas and the Sea of Azov, and their tributaries. The lake fisheries also are very valuable. Herrings, codfish, and salmon are caught in abundance in the White Sea, and are the main source of livelihood to the inhabitants of those regions. The value of the Russian fisheries is estimated at about $10,000,000 annually. Bee-culture is general in R., and silkworms are reared in the Caucasus.—See statistical works of Sarauw (1873); Von Lengenfeldt (1875); Wilson (St. Petersburg 1876); *Russia*, by W. R. Morfill (1880).

History.—Copious histories of R. are numerous, those of Karamzin, Solovief (1851-77), and Schnitzler (Germ. trans. 1784), being standard Russian works. More accessible are Turgenief, *La Russie* (Par. 1847); Rambaud, *Histoire de Russie* (Par. 1878).—The population of the Russian empire is of various nationalities, but the predominant one is the Slavonic (q.v.). The eastern Slavs, ancestors of the Russians, were settled near the sources of the rivers Volkhof, Bug, Dniester, Dnieper, and Don, and consisted of several tribes whose chief towns were Novgorod and Kieff. Being harassed by their warlike neighbors, and distracted by intestine dissensions, the Slavs of Novgorod and the neighboring Finnish tribes, in 862, sent ambassadors to 'the Variags (Varangians, Normans) beyond the sea,' inviting their chiefs to come and reign over them. Three brothers of the tribe, called by the old chroniclers *Rurik* (q.v.), *Sineus* (Sindf), and Truvor, accepted the invitation, and at the head of a band of armed followers (*droujina*) took possession of the terri-

tory of Novgorod.—Oleg (ruled 879–912), who exercised authority as regent to Igor, Rurik's son, took Kieff, and made it the cap. of the embryo empire, subduing the neighboring tribes, and even successfully attacking the Byzantines.—*Igor* (ruled 912–945) did nothing of note, but his widow and successor, *Olga* (ruled 945–957), was a wise and able ruler: she was baptized 955 by the patriarch of Constantinople, and abdicated soon afterward in favor of her son *Sviatoslaf* (ruled 957–972), a warlike monarch and a pagan, who was treacherously murdered by a neighboring tribe with whom he was at war. On his death, the principality was divided among his three sons, and the usual quarrels followed, and continued till *Vladimir* (ruled 980–1015), youngest son, became sole ruler. The Norman immigrant stock now definitively became amalgamated with the Slavonic race. Vladimir's reign is the 'heroic' epoch of Russian history; and the glories of the court, and the valiant feats of the warriors of the 'sunny Prince Vladimir,' have been handed down through ages in legend and song. His successful wars extended the boundaries of R. to Lake Ilmen on the n., to the mouths of the Oka and of the Khoper (affluent of the Don) on the e., to the falls of the Dnieper on the s., and to the sources of the Vistula on the w. He became a convert to the Greek faith, and 988 was baptized, with his followers; his example being soon followed by the whole nation, for whose spiritual guidance and supervision a metropolitan was established at Kieff. He followed the evil example of his father in dividing his dominions; and after his death a civil war broke out among his four sons, in which *Jaroslaf*, Prince of Novgorod, was ultimately (1036) successful. This prince (ruled 1036–54) did much to civilize his subjects by building towns, founding schools, and especially by ordering the compilation of the first Russian code of laws ('Rousskaia Pravda'), the most prominent item of which was the limitation of the right of family feud, a limitation which was changed into total abolition after his death, by his sons, who shared the principality among them. Each of these petty princes in turn divided his portion of territory among his sons, till the once great and united realm became an agglomeration of petty states quarrelling with each other, undergoing absorption by a more powerful neighbor, or being redivided. This state of anarchy, confusion, and petty warfare dates from the death of Jaroslaf 1054, and continued, more or less, till 1478.—The principal among the sub-divisions of R., during this period, were, according to Russian authorities, *Sousdal*, which occupied the upper and central parts of the basin of the Volga, and from which, in the beginning of the 13th c., sprang the principalities of *Tver*, *Rostoff*, and *Vladimir*; *Tchernigov* and *Seversk*, which occupied the drainage-area of the Dessna (affluent of the Dnieper), stretching to near the sources of the Oka; *Riazan* and *Murom*, along the Oka basin and the sources of the Don; *Polotsk*, including the basins of

the W. Dwina and Beresina; *Smolensk*, occupying the upper parts of the basins of the W. Dwina and Dnieper; *Volhynia* and *Galicia*, the first drained by the Pripet, the second lying on the n.e. slope of the Carpathian Mountains (the two were united 1198); *Novgorod*, by far the largest of all, which occupied the immense tract bounded by the Gulf of Finland, Lake Peipus, the upper parts of the Volga, the White Sea, and the N. Dwina; and the grand-duchy of *Kieff*, which, from its being formerly the seat of the central power, exercised a sort of supremacy over the others. Novgorod, however, from its size and remoteness, as well as from certain privileges granted to it by Jaroslaf, was almost independent of the grand-duchy. The citizens of Novgorod chose their own dukes, archbishops, and in general all their dignitaries; and proved the superiority of their system of self-administration by increasing in power and wealth year by year. One of the chief factories of the great Hanseatic League was established in Novgorod in the 13th c. In fact, so great was its fame throughout R., as to give rise to the proverb, 'Who can resist God and the mighty Novgorod?' The princes of these states had each his standing army, and were continually quarrelling; but the people were less oppressed than would be expected under such circumstances, on account of the establishment in each state of a 'common council' or *veche*, which exercised an important influence in state affairs, and without which the prince was almost powerless. This period was marked also by the gradual amalgamation of the different Slavic races into one, the present Russian race; a process aided doubtless by the universal dissemination of Christianity, which assimilated their various languages, manners, and customs.—The chief of the grand-dukes of Kieff was *Vladimir*, surnamed 'Monomachus' (ruled 1113–1125), whom chroniclers are never tired of lauding as a model prince, and one whose authority was acknowledged almost as paternal by the princes of the other provinces. In 1163 the ruler of the principality of Vladimir took possession of Kieff, and proclaimed himself grand-duke.—In 1222 the Mongol tide of invasion had swept westward to the Polotzes, a nomadic tribe who ranged over the steppes between the Black Sea and the Don, and whose urgent prayers for aid were promptly complied with by the Russian princes; but in a great battle (1223) on the banks of the Kalka (tributary of the Sea of Azov), the Russians were totally routed. The Mongols, as usual, did not follow up their victory; but 12 years afterward, Batû Khan, at the head of half a million of Kiptchak Mongols, conquered e. Russia, destroying Riazan, Moscow, Vladimir, and other towns. The heroic resistance of Prince George of Vladimir cost the lives of himself and his whole army on the banks of the Siti. The Mongol conqueror's victorious career was, however, arrested by the impenetrable forests and treacherous marshes s. of Novgorod, and he was forced to return to the Volga. In 1240

he ravaged the s.w., destroying Tchernigov, Galicia, and Kieff; ravaged Poland and Hungary, defeating the Poles at Wahlstatt, and the Hungarians at Saïo; but being checked in Moravia, and receiving at the same time the news of the khakan's death, he retired to Saraï, on the Akhtuba (tributary of the Volga), which became the cap. of the great khanate of Kiptchak. Thither the Russian princes repaired to swear allegiance to the khan and take part in the humiliating ceremonies which the barbarous conqueror exacted from his tributaries. The taxes of R. were farmed out by the khan to contractors, generally oriental merchants; and they were collected by the aid, when necessary, of the khan's soldiers. But in later times (during the most of the 14th and 15th c.), when the fiery energy of the Mongols was on the decline, the taxes were collected by the Russian princes and sent to Saraï. The Mongol invasion had an evil influence on the political, social, and moral life of R.; it totally destroyed the elements of self-government, which had already attained considerable development, arrested the progress of industry, literature, and the other elements of civilization, and threw the country more than 200 years behind the other states of Europe. The principalities of Kieff and Tchernigov never recovered from this crushing blow, and the seat of the metropolitan was removed to Vladimir. Their decline, however, made room for the rise of Galicia to pre-eminence in western R., and under the rule of a series of wise princes it preserved greater independence than any of the Russian principalities; till, in the latter half of the 13th c., it was taken possession of by Casimir III. of Poland; and about the same time Volhynia was joined to the grand-duchy of Lithuania. The rise of this latter state was favored by the prostration to which the Russian princes were reduced by the Mongol invasion, and after a flourishing existence of several centuries, during which it extended in power, so as to include Livonia proper and the Russian provinces of White R., Volhynia, Podolia, and the Ukraine, it was joined 1569 to Poland.—On the n. of Lithuania arose in the beginning of the 13th c. another power, the Livonian Knights Sword-bearers, who took possession of Livonia, Courland, and Esthonia, as well as portions of the territory of Novgorod and Pskov. —The grand-ducal title passed after the Mongol invasion from Kieff to Novgorod, and afterward to Vladimir, where the celebrated Alexander Newski (q.v.) (reigned 1252–63) swayed the sceptre.—In the beginning of the 14th c., eastern R. consisted of the principalities of Sousdal, Nijni-Novgorod, Tver, Riazan, and Moscow; and long and bloody contests for the supremacy took place between the two most powerful of these, Tver and Moscow. At last, under the guidance of *Ivan Kalita* (reigned 1328–40), founder of the system of administrative centralization which prevailed till the time of Peter the Great, Moscow became the chief grand-duchy. This result was due to various causes; chief of which were

the central position of Moscow, the prevalence there of the law of primogeniture, the favor of the Mongol khan, the sympathy of the church—whose head the metropolitan had removed thither from Vladimir 1325—and the weakness of most of the other princes.—Ivan's son and successor, *Simeon the Proud* (reigned 1340--53), followed in his father's footsteps, as did also the regency which administered the govt. during the reign of the weak-minded *Ivan II.* (reigned 1353--59), and the minority of his son Dmitri.—*Dmitri* (1359–89) conquered Nijni-Novgorod, carried on war with success against Tver and Riazan, and profited by the weakness of the Mongol khanate, now divided into the four hordes of Nagaisk, Crimea, Kazan, and Astrakhan, to make the first attempt to shake off the shameful yoke under which the Russians had groaned so long. His brilliant victory over the Khan Mamaï on the banks of the Don (1380), which conferred on him the epithet Donskoï, was the first step to liberation; but the succeeding khan, in revenge, burned Moscow, exacted a heavy tribute from the people, and rivetted their bonds more firmly than ever.—*Vassili I.* (reigned 1389--1425) obtained possession of the principality of Nijni-Novgorod with the full consent of the khan, and conquered Rostoff and Murom. During his reign, R. was twice invaded by the Tartars, first under Timur, and again under Edijeï, and was at the same time attacked by the Livonians.—*Vassili II., the Blind* (reigned 1425–62), ruled during a period marked with continual civil wars among the various princes for the grand-ducal throne; but from this period the division of power in eastern R. rapidly disappeared, internal troubles ceased, and the re-united realm acquired from union the power of casting off the Tartar yoke.—These results were achieved by *Ivan III.* (reigned 1462–1505), surnamed 'the Great,' who availed himself of every opportunity for abolishing the petty principalities which owed him allegiance as grand-duke, and manœuvred so skilfully, that some of the princes voluntarily surrendered their rights, others bequeathed their lands to him, while others, as the prince of Tver, were reduced by force of arms. The heaviest task of all was the reduction of Novgorod, but so vigorously did Ivan carry out his schemes, that 1478 this last of the great principalities was added to his empire. He then took advantage of the dissensions between Achmet, Khan of the Golden Horde, and Mengli-Gheraï, Khan of the Crimean Horde, to deliver R. from its state of servitude by uniting with the latter; their combined arms destroying the power of the former 1480; and the kingdom of Astrakhan, which rose on its ruins, was wholly unable to cope with the now powerful monarchy. He next turned his attention to the w. provinces, which had formerly belonged to the descendants of St. Vladimir, but were now in the hands of the Lithuanians, under whom the adherents of the Greek Church were bitterly oppressed by the Rom. Catholics, and accordingly hailed

the advance of Ivan's army as a deliverance from persecution. The battle which followed was in favor of the Russians, but produced no important results. Ivan married (1472) Sophia, niece of Constantine Palæologus, the last Byzantine emperor; and he introduced the arts of civilization through the medium of architects, founders, coiners, miners, etc., whom he brought from Italy, the result of whose labors is seen in the Kremlin and the Cathedral of the Assumption (Ouspenski Sobor). He also fortified many towns, introduced to his court the splendor of Byzantium, assumed the title Czar of All the Russias, adopted the arms of the Greek empire, and united the existing edicts into a body of laws, the 'Soudebnik.'—*Vassili III.* (reigned 1505–33) followed closely his father's policy, made war on the Lithuanians, from whom he took Smolensk, and incorporated with his dominions the remainder of the small tributary principalities.—His son, *Ivan IV.* (reigned 1533–84), known afterward as 'the Terrible,' became monarch at the age of three years, and the country during his long minority was distracted by the contentions of factious bojars striving for power. Fortunately, however, on his attaining his majority 1547, he found two wise and prudent counselors, Sylvestre and Adascheff, who with his queen, Anastasia Romanoff (see ROMANOFF), exercised over him a most beneficent influence. The interior administration was remodelled, the 'Soudebnik' of his grandfather was reformed and amended, the *Streltzi*, the first standing army in R., were established, and printing was introduced. His arms were everywhere victorious; the strongly fortified city of Kazan was captured 1552, and the kingdom of which it was the cap. was annexed to his empire; and the kingdom of Astrakhan shared the same fate soon afterward. The marauding Tartars of the Crimea were held in check, and the Knights Sword-bearers attacked and driven from Livonia and Esthonia. About this time a remarkable change came over Ivan's character, which seems to have been of the nature of insanity and in some way connected with the death of his wife, Anastasia. He became suspicious of every one, believed himself surrounded with traitors, banished his two counselors, Sylvestre and Adascheff, and persecuted the bojars, many of whom perished on the scaffold, while others fled to foreign countries. His insane rage fell upon whole towns; thousands of people were destroyed in Tver, Novgorod, and Moscow; and, finally, he murdered his eldest son. Stephen Bathory, King of Poland, meantime wrested Livonia from him, and the Crim-Tartars made an irruption northward, and burned Moscow. During the reign of this monarch, w. Siberia was conquered for R. by the Cossack Ermak: see SIBERIA.—His son, *Feodor* (reigned 1584–98), was a feeble prince, who intrusted his brother-in-law, Boris Godounof, with the management of affairs. Godounof was a man of rare ability and intellect, and proved an able administrator. The Russian dominion in Siberia was consolidated,

numerous towns and fortresses were erected in the s. as barriers against the Crim-Tartars, the Greek Church in R. was declared independent of the patriarch of Constantinople. Feodor was the last reigning monarch of the house of Rurik, for he died childless, and his only brother, Dmitri, was murdered 1591 by order of Godounof, according to popular rumor.—After the death of Feodor, representatives of all classes were convoked at Moscow to elect a new sovereign, and their choice fell on *Godounof* (reigned 1598–1604). The mysterious death of Prince Dmitri favored the appearance of pretenders to his name and rank, the first of whom, a supposed monk of the name of Gregory Otrepieff (see DEMETRIUS), was defeated by Godounof; but on the sudden death of the latter, Otrepieff was crowned 1605. A revolt, headed by Prince *Vassili Shouisky* (reigned 1606–10), soon broke out, the czar was murdered, and Shouisky elevated to the vacant throne. But a second false Dmitri now appeared, and Sigismund of Poland, taking advantage of the confusion thus produced, invaded R., proclaimed his son Vladislaf czar, and took possession of Moscow (1610), carrying away the czar to die in a Polish prison. At the same time, hordes of Tartars, predatory bands of Poles, and gangs of robbers devastated the provinces, and the wretched country was reduced to the verge of complete disorganization. But the clergy nobly stood forth to save the state from ruin; and Minin, a common citizen of Nijni-Novgorod, so aroused his fellow-citizens that they volunteered for military service, and chose as their leader Prince Pojarsky, a man of distinguished valor. Pojarsky retook the capital, drove the Poles out of R., and convoked an assembly of representatives, who unanimously chose for their czar *Michael Feodorovich Romanoff* (reigned 1613–45): see ROMANOFF. The first care of the new monarch was to put an end to the revolt of the Don Cossacks, who had set up the son of the first false Dmitri as czar, and to the depredations of the robber-gangs in s.w. Russia. In 1617 he concluded a treaty with Sweden, by virtue of which that power received the coasts of the Gulf of Finland and a considerable pecuniary indemnity, in consideration of Philip, the brother of the Swedish monarch, renouncing his claims to the Muscovite throne. In 1618 and 34 he purchased peace from the Poles at the cost of Smolensk and a portion of Seversk. Having thus freed himself from danger of foreign interference, he directed his attention to the internal administration, which, especially in the courts of justice, was reduced to a deplorable condition; and to aid him in this necessary task, he summoned a general council of representatives at Moscow.—*Alexei* (reigned 1645–76), his son and successor, being a minor, the nobles seized the opportunity of increasing their power and exercising oppression and extortion over their inferiors, till rebellions broke out in various districts. Other causes of discontent were the heaviness of the taxes, the oppression of the serfs, the depreciation of

the currency which was changed from silver to copper, and the secession from the Russian Greek Church of those who disapproved of the changes and corrections in the books and liturgy of the church introduced by the patriarch Nikon. These malcontents were accordingly persecuted, and fled, some to n. Russia, others to the Ukraine, where they founded many colonies, and still exist apart under the name of 'Old Ritualists' (*Staro-Obriadzy*). A general council, convoked to deliberate on the best means of restoring peace to the country, revised the existing laws, and composed (1649) a new code —'Sobornoe Ulajenie,' which granted to every subject the right of direct appeal to the czar. Tolls on the highways were abolished, the English and other foreign merchants were deprived of their privilege of free trade with R., and the silver currency was reintroduced. The chief events in foreign policy were the acquisition of Little Russia by the voluntary submission of the Cossacks (see POLAND); a consequent war with Poland, in which R. acquired Smolensk and the greater part of White Russia; and a war with Turkey, which continued till after the accession of *Feodor* (reigned 1676–82), when it was terminated (1681) by the treaty of Bakhchisarai, by which Turkey gave up all claims to Little Russia.—After Feodor's death, the general council of the land, in accordance with his last wishes and their own predilections, chose his half-brother Peter as czar, but his half-sister Sophia, an able and ambitious princess (see PETER I., THE GREAT), succeeded in obtaining the reins of power as princess-regent. She concluded peace with Poland 1686, made two unsuccessful campaigns against the Tartars of the Crimea; and after an attempt to deprive Peter of his right to the throne, and, failing in this, to assassinate him and his mother, she was forced to resign all power and retire to a convent. All her accomplices were put to death; and PETER (reigned 1689–1725) ascended the throne as sole ruler, his half-brother Ivan being allowed to retain the title of czar conjointly, and to appear as such at public ceremonies, but without any real authority.—In order more fully to show the importance of the changes wrought by Peter in R., a brief retrospect of its social and political condition at the date of his accession is necessary. At the head of govt. stood the czar, with absolute power in administrative, judicial, and military affairs. In the exercise of authority he was aided by his council, the 'Bojarskaia Douma,' and in cases of extreme need by a general council of representatives of the people, which latter, however, had a right of deliberation only. The criminal code was cruel in the extreme. Of the standing army, the *Streltzi* only deserved the name. The population was divided into two great classes: *bojars* or nobles, who were bound to render service for their estates; and *burghus* or industrial and trading classes, and *serfs*, who were bound to the soil. The clergy exercised great influence over all classes, possessed offices in the 'douma,'

and exercised political functions. Agriculture was in a low state, and the few manufactories and industrial establishments were in the hands of foreigners. Civilization and learning, introduced during the confederative period, had never recovered the shock of the Mongol invasion; but in later times they entered R. through the connection of Novgorod with the Hanse League, and from intercourse with Poland, though they never reached the rural population or the lower classes. The education even of the higher classes was limited to reading and writing, and the first school for classics and theology made its appearance not till Feodor's reign. Fine arts were limited to architecture and painting of sacred subjects) after the Byzantine school. The first newspaper appeared (in Moscow), and the first theatre was established, during the reign of Alexis. The degraded social condition and the oriental influence of the Mongols left powerful traces on the domestic manners and habits of the Russians, among which were the despotic authority of the father over his household, and the low position of women in domestic life; women of the lower ranks being made mere slaves, while those of higher rank were completely excluded from social intercourse with the other sex, and were condemned to a dull and dreary existence in their 'terems.' Marriages were concluded by the parents without consent of bride and bridegroom.

The history of R. during Peter I.'s reign is merely a biography of that monarch: see PETER I. (ALEXEIVICH) for a brief sketch of the numerous and important improvements effected by him in the government and civilization of his subjects. It must, however, be noted, that, in carrying out his well-meant schemes, he seldom consulted the national character of his people, or the natural conditions of the country; consequently, when the irresistible pressure of his high intellect and indomitable will was withdrawn, it was found that, in great part, the civilization which he had forced on his subjects was but skin-deep.—In accordance with the terms of his will, his second wife, *Catharine I.* (q.v.) (reigned 1725–27), succeeded him; though the old or anti-improvement part of the nobility supported the claims of the only son of the unfortunate Alexei (q.v.), *Peter II.* (q.v.) (reigned 1727–30), who soon afterward obtained the imperial throne. The reigns of both these sovereigns were occupied with court quarrels and intrigues, Menshikoff (q.v.) during the former, and Dolgorouki during the latter, being the real rulers.—On the death of Peter II., the privy council, setting aside the other descendants of Peter I., conferred the crown on *Anna* (q.v.), Duchess of Courland, daughter of Ivan. Her reign (1730–40) was marked by predominance at court of the German party, who, unchecked by the weak sovereign, treated R. as a great emporium of plunder, and the Russians as barbarians (see BIRON). Under their influence, R. restored to Persia her lost Caspian provinces, and was led into a

war with Turkey productive of nothing but an immense loss of men and money.—Her successor was *Ivan* (reigned 1740–1), son of her niece, the Duchess of Brunswick, Anna Carlovna (q.v.); but he was speedily dethroned by *Elizabeth* (q.v.) (reigned 1741–62), daughter of Peter I., who deprived the German party of the influence that it had so shamefully abused, restored the senate to the power with which it had been intrusted by Peter the Great, established a regular system of recruiting, abolished tolls, and increased the duties on imports. During her reign, French influence was paramount, and the French language supplanted German at court. R. gained by the treaty of Abo (1743) a portion of Finland, and took part in the *Seven Years' War* (q.v.).—Elizabeth's nephew and successor, *Peter III.* (q.v.) (reigned a few months in 1762), put a stop to all interference with the quarrels of w. Europe, and introduced commendable ameliorations of the oppressive enactments of his predecessors; but he was speedily dethroned by his able and unscrupulous consort, who, as *Catharine II.* (q.v.) (reigned 1762–96), ascended the throne, and proved herself the greatest sovereign of R. after Peter I. Her successful wars with Turkey, Persia, Sweden, and Poland, largely extended the limits of the empire; and while by her foreign policy protecting her subjects from external invasion, she gave attention also to internal reforms. The laws and administrative arrangements were revised, and the empire was divided into govts. (an arrangement which, with slight modification, still subsists), each govt. being under a separate administration, both as to polity and as to justice.—Her son and successor, *Paul I.* (q.v.) (reigned 1796–1801), at first, through apprehension of the revolution in France, joined the Austrians and British against France; but soon capriciously withdrew, and was about to begin war with Britain, when he was assassinated. He gave freedom of worship to the 'Old Ritualists,' which till this time had been withheld; but he established a severe censorship of the press, prohibited introduction of foreign publications, and organized a secret police.—His eldest son, *Alexander I.* (q.v.) (reigned 1801–25, was at the outset desirous of peace, but was soon drawn into the vortex of the great struggle with France, in which he acted a prominent, though at one period an inconsistent, part: he raised R. to a place in the first rank among European states. For the character of his rule and the internal improvements that he effected, see ALEXANDER I. (PAULOWITSCH); and for an outline of the warlike operations, see NAPOLEON I. The Holy Alliance (q.v.) and the example of conservative policy set by Austria exercised a pernicious influence on the latter part of his reign; and the higher classes, who had looked for the introduction of at least a portion of the liberal institutions that they had seen and admired in w. Europe, became so dissatisfied, that when his youngest brother, *Nicholas I.* (q.v.) (reigned 1825–55), from whom they had nothing to hope, suc-

ceeded, they broke into open rebellion, which was speedily crushed. A stop was now put to the rapid advance of R.'s prosperity; wars were declared with Persia and Turkey; and a long and deadly struggle commenced with the Caucasian mountaineers—all for the ill-concealed object of extending Russian domination; and the cession of Erivan and Nahituvan by Persia, of the plain of the Kuban, of the protectorate of the Danubian principalities, and of the free right of navigation of the Black Sea, the Dardanelles, and the Danube by Turkey, only whetted the appetite for more spoil. In 1830, Nicholas converted Poland (q.v.) into a Russian province; 1849 he officiously aided Austria in quelling the insurrection of the Magyars; 1853 his almost irresistible craving for more territory led him (probably under the impression that Turkey would stand alone, as she had done hitherto) into the Crimean War (q.v.), in which, though the allies, Britain, France, and Sardinia, did not obtain any decided success, R. suffered immense loss of military prestige on the Danube, at Silistria, on the Alma, and before Sebastopol, and was almost drained of her vast resources of men and money.—The accession of Nicholas's son, *Alexander II.* (reigned 1855–81)—one of whose first acts was the conclusion of the Peace of Paris (1856), by which R. lost the right of navigation on the Danube, a strip of territory n. of that river, and the unrestricted navigation of the Black Sea—was the signal for revival of those schemes of reform which had been crushed so despotically by the late czar. Alexander's first great reform was the abolition of serfdom, thus creating 14 millions of new free citizens. Corporal punishment, and the farming-system of the indirect taxes, were abolished; and the judicial power was separated from the administrative, and founded on trial by jury. The insurrection in Poland (q.v.), 1863–4, was suppressed with extreme severity; and 1868 the last relics of Polish independence disappeared in the thorough incorporation of the kingdom with the Russian empire. The subjugation of the Caucasus was completed 1859. Successive expeditions, among the last those against Khiva and Khokan, resulted in establishing Russian supremacy over all the states of Turkestan. In 1876, on the death of the gov.gen. of the Baltic Provinces, their administration was merged in that of the central govt. R. in 1870 intimated that she no longer felt bound by certain conditions of the treaty of 1856, and in a conference at London 1871 her claims were admitted. The misgovernment of Christian subjects by Turkey, and the cruel suppression by the same power of incipient rebellion in Bulgaria 1876, led to a conference of the European powers at Constantinople. Turkey rejected the proposals of the conference for better administration of the subject provinces; and R., to enforce these concessions on Turkey, declared war 1877, Apr. At first the Russian progress was rapid; but the energy of the Turks during the

summer compelled the invaders largely to augment their forces both in Bulgaria and in Armenia. The chief events in the war were the desperate but unsuccessful attempts to expel the Russians from the Shipka Pass in the Balkans, the fall of the Turkish fortress of Kars in Nov., the resolute defense of Plevna by Osman Pasha from July till Dec., and the capture of the Turkish army of the Shipka in Jan. The armistice signed 1878, Jan., was followed in March by the treaty of San Stefano; and after diplomatic difficulties that seemed for a time likely to issue in war between R. and England, a congress of the great powers met at Berlin 1878, June, and sanctioned the rearrangement of the Ottoman empire (see TURKEY) and the cession to Russia of the part of Bessarabia given to Moldavia 1856, as also of the port of Batum, of Kars, and of Ardahan. The growth of Nihilism (q.v.) and of revolutionary discontent, leading to severe repressive measures, occasioned many murderous outrages, culminating in the assassination of Alexander II. 1881.—He was succeeded by his son ALEXANDER III. (ALEXANDROVITCH) (q.v), who died in 1894, and was succeeded by his son, Nikolas II.

In 1891-2 R. suffered severely from a famine caused by a great drought and a consequent failure of general crops. The terr. afflicted comprised 13 provinces of European R. where the suffering was general, and 5 other provinces where it was partial. The 13 provinces covered a very extensive area, containing a population of many millions. The govt. appropriated $75,000,000 toward relieving the distress by providing food and work; a central famine committee was appointed; and the Red Cross Soc. undertook the distribution of supplies. The principal foreign aid was from the U. S., whose people sent nearly 25,000,000 lbs. of flour, grain, and breadstuffs, besides large sums of money.

The most noteworthy events between the accession of Nikolas II. and the opening of the war with Japan (1904), exclusive of the international complications leading thereto, were (1896) the negotiation with China of a convention permitting the construction by R. of the Siberian railroad across Northern Manchuria by which the route to Vladivostok would be greatly shortened; (1898) the calling by the czar of an international peace conference, which was held at The Hague in 1899, and resulted in the establishment of a permanent international arbitration tribunal with headquarters in that city; (1899) the negotiation of an agreement with Great Britain concerning their respective aims and interests as to railroad development in China; (1900) the participation by R. in the milit. movements in China and Manchuria following the Boxer uprising (see BOXERS; CHINESE EM-

FIRE); (1901) the excommunication of Count Tolstoi by the Holy Synod, which caused an outbreak of several thousand students in St. Petersburg, Odessa, Kharkoff, and Moscow, and an attempt to assassinate M. Robiedouostzeff, the procurator of the synod; (1902) the serious labor strikes and riots throughout central R., caused by the refusal of the authorities to grant the demand of the workmen for permission to organize trade unions on the English models, and leading to the proclamation of martial law in five districts of the province of Poltava; and (1903) the massacre of Jews and destruction of their property in Kishineff (q.v.), the proclamation of a new tariff which increased the rates of the previous one 50 per cent. on a large majority of imports and over 100 per cent. on many important groups, the imperial decree granting to all subjects of other than the national religion and to all foreign confessions freedom of creed and worship according to their own rites, and the decree placing all the property of the Armenian church in R., excepting the churches in St. Petersburg and Moscow, under the control of the Russian crown minister.

The causes of the war with Japan in 1904 are traceable to the outcome of the Chino-Japanese war of 1895. In the Shimonoseki treaty of peace China ceded to Japan the Siao-Tung peninsula and its appurtenant islands together with Formosa and the Pescadores, and recognized the full and complete independence of Corea. R. protested against the Siao-Tung cession, and was supported in so doing by her ally, France, and by Germany, and because of this opposition Japan relinquished the peninsula and received as compensation an additional indemnity. An alleged secret treaty between R. and China gave the former permission to extend the Siberian railroad to Hunch-au and Kirin, China reserving the power to acquire the lines so constructed after 30 years. The port of Kiao-chow, on the Yellow Sea, was also offered to or demanded by R., who agreed to aid China in defending Port Arthur and Talien-wau; but late in 1897 Germany demanded of China the grant of the port of Kiao-chow for a coaling station, and almost immediately afterward R. occupied Port Arthur with a fleet on the assertion that her ships would simply winter there. Early in 1898 Germany received Kiao-chow on 99 years' lease; Great Britain offered to supply China with a loan of $60,000,000 on condition that three new treaty ports, including Talien-wau, should be opened to the world's trade and that the Yang-tse-Kiang valley should not be alienated to any other Power; R. protested against opening Talien-wau and demanded of China that Port Arthur, Talien-wau, and the adjacent territory should be leased to her for the same time and under the same terms as Kiao-chow had been leased to Germany. This demand of R. was granted, excepting that the time was reduced to 25 years with power of extension, and

the Liao-tung peninsula, acquired by Japan as a fruit of war and relinquished under duress of R., France and Germany was occupied by R., 1898, March 28, Wei-hai-wei, on the opposite point of the Chinese mainland, was soon afterward occupied by Great Britain.

In the meantime it was declared that R. had agreed not to impede Japanese industry or commerce in Corea; and it soon became an unquestioned fact that Japan had acquired paramount interests in that empire. In 1899 R. demanded of China a concession for a branch line to connect the Trans-Manchurian railroad system and Port Arthur with Peking; but Great Britain succeessfully opposed this as a menace to her own Niu-chwang system. In what is known as the Manchurian convention between R. and China the former agreed "if no further rebellion occurs and action on the part of other Powers does not interfere" to withdraw her forces from Manchuria within three years (*i.e.* 1903). The terms of this convention were not made known till 1901, in which year China further agreed to permit R. to station a political resident in Mukden, Niu-chwang, and other places occupied by R. till R. should be satisfied that the pacification of the province was complete, and Japan remonstrated against the policy of R. in Manchuria. By this time China appeared powerless to resist the ever-increasing demands of R., even with the assurance of the moral and other support of Great Britain, and Japan viewed with alarm for her interests in Corea the steady movement of R. to control all of Manchuria.

A glance at the map will show more clearly the political situation of the interested nations at this time: R. dominating Manchuria, building the new seaport of Dalny, and making Port Arthur an imposing naval station; Japan dominating Corea; Great Britain, having a protective alliance with Japan, occupying Wei-hai-wei; and Germany controlling Kiao-chow and its vicinity. Between the Japanese in Corea and the Russians in Manchuria wound the boundary river of Yalu.

In 1903, July, a number of important conferences of all the chief officials of R. in the Far East was held at Port Arthur, and Aug. 12, by an imperial ukase the Amur district and the Kwan-tung territory were formed into a special viceroyalty of R. under the command of Admiral Alexieff. Near the close of this year the relations of Japan, Corea, China and R. passed to the stage of diplomatic action. Japan contended, in brief, that R. should keep her pledge concerning the evacuation of Manchuria, should recognize Japan's paramount interests in Corea, and should acknowledge the sovereignty of China over her Manchurian province. R. agreed to permit Japan to act in her economic interests in South Corea and to adopt strategic measures to conserve those interests; to allow her full commercial freedom of action in North Corea, but prohibiting her permanent occupation of fortified towns; and, while declin-

ing to accept any conditions concerning Manchuria, to permit Japan and other Powers to represent their interests there, embracing the 'open door' for Mukden and Niu-chwang. R. also proposed a neutral zone on each side of the Yalu and Tuwen rivers.

The breaking off by Japan of diplomatic relations with R. on 1904, Feb. 6; her opening of hostilities at Chemulpo, Corea, and at Port Arthur, Manchuria, Feb. 8 and 9, the successful advance through Corea, across the Yalu and into Manchuria everywhere victorious, was a serious blow to Russian prestige, which overthrew all the cherished schemes of Far Eastern colonization. See RUSSO-JAPANESE WAR.

Two features of the early part of the struggle had a special interest to Americans. A few days before hostilities began the U. S. and Japan negotiated a treaty for the opening to foreign trade of Mukden and Antung, both in Manchuria, and, 1904, Feb. 17, in response to an application by the U. S., the Corean govt. opened the port of Wiju, on the opposite side of the Yalu and near Antung. On Feb. 10, Secretary Hay sent an identical note to all the Powers signatory of the Peking protocol, urging that in the war the neutrality and administrative entity of China should be respected by both belligerents and the area of hostilities limited as much as possible. A more or less favorable response was received from each of the Powers addressed. The opening of the Manchurian ports and Secretary Hay's note were considered at the time as master-strokes of American diplomacy.

The birth of an heir to the throne (see ALEXEI NIKOLAIEVITCH) was the occasion for a proclamation of amnesty and political reform, in which a general pardon is granted to all political offenders not charged with murder, and a general reduction is announced in sentences for common-law offenses. Further, corporal punishment for peasants, and for first offenses among the sea and land forces is abolished. Fines imposed upon Jewish communes in the cases of Jews avoiding military service are remitted; and there is a like remission of the fines imposed on the rural and urban communes in Finland that made opposition to the conscription in 1902-3.

A portion of the Russian Baltic fleet *en route* to the Far East, came upon an English fishing fleet in the North Sea in the night of Oct. 22-23, and, mistaking the trawlers for Japanese torpedo boats, fired upon them, sinking one of the fisher-craft, killing the captain and third mate, and wounding several of the crew. The British govt. immediately demanded an apology for the act, indemnification for the injury, and punishment of the naval officers concerned. The Czar expressed to the British King his profound regret for the occurrence, and promised full reparation. To investigate the matter, and fix the responsibility the two governments agreed

to submit the questions at issue to a court of The Hague Commission.

The minister of the interior, Vatsheshaf Constantinovitch von Plehve, leader of the reactionary party, and believed to be responsible for the massacres of Jews, the oppression of Finland, and in some degree the war with Japan, was assassinated at St. Petersburg July 28. His successor, Prince SVIATOPOLK-MIRSKY (q.v.), in consonance with the Czar's proclamation of amnesty and reform, ordered an assembly of the Finnish national diet to be held in December; approved the return of prominent Finlanders from exile; and relaxed the censorship of the press, so that newspapers in R. were permitted freely to express liberal opinions on questions of administration and even on the war policy of the govt. More significant even than this, a convention of representatives of 38 provincial Zemstvos was permitted to be held in St. Petersburg in the middle of Nov.,, and a memorial expressing their views as to needed reforms was presented to the emperor, and graciously accepted for consideration by him.

On the 10th of May, 1906, the Imperial Douma (q.v.) assembled in St. Petersburg, in compliance with the Emperor's proclamation, and among its first acts were demands for the abolition of the death penalty throughout Russia, universal amnesty for all persons convicted of political crimes, the immediate liberation of those in prisons accused of such offenses, universal suffrage, including women, and a distribution of the lands among the people. Other sweeping reforms were subsequently demanded, all of which were ignored by the Government. Only one of the demands of the Douma was countenanced by the Czar and his advisers, namely, that of universal suffrage, and this was accompanied by a declaration on their part that such a policy would produce a more conservative Douma than the one then in session. On the 26th of May a crisis was reached in the conflict between the opposing elements, when Premier Goremykin dismissed, in the name of the Czar, practically all of the proposals of the parliament. This was followed, June 18th, by the Emperor placing in the hands of the premier a ukase dissolving the Douma, a blank space being left for the date to be filled in at pleasure by the complaisant minister; whereupon the Douma passed a resolution declaring that it would not dissolve. These acts intensified the hatred between the people and the governing classes, a vast majority of the former evidently being in favor of a republican form of government. The Douma was assured of the hearty support of the people, and the army, upon which the Czar and his adherents relied, manifested such evident sympathy with the popular movement as to shatter faith in the belief that it would continue to support reactionary measures.

Meanwhile another terrible massacre of Jews had taken place at Bialystok, resulting in the murder of between four and five hundred men, women and children, and on investigation by a commission appointed for the purpose by the Duma it was found that the outrage had been instigated by the Czar's officials. The chief instigator was even promoted 'for his loyalty.' This outrage was followed by a flame of discontent throughout the empire. Murder, outrage and robbery became rife everywhere, while in the country districts the starving peasants burnt villages and estates and helped themselves to the grain and provisions which had been stored by the landlords. Mutterings of discontent were no longer confined to the regular army and navy, but extended even to the Cossacks, whom the Emperor had previously relied upon to support him under all conditions. The advocates of constitutional government went to extreme lengths in debate, even threatening the Emperor with the loss of both crown and life. The situation finally became impossible, and on July 21, 1907, the suspended edict was put in operation, and the assembly dispersed. But the demand for representative government would not down, and in 1907, Mar., a second Duma assembled, but nothing was accomplished, for it was as short lived as the first. The third Duma assembled on Nov. 14, 1907, but as it was chosen by a restricted franchise, it represented chiefly the reactionary land-owning nobility, and the best that can be said of it is, that its semblance of constitutional government quieted, if it did not satisfy, the agitators for reform.

Consult: Clarke, *Russia's Sea Power, Past and Present* (1898); Howard, *Prisoners of Russia* (New York, 1903); Kovalevsky, *Russian Political Institutions* (Chicago, 1903); Krausse, *Russia in Asia, 1558-1899* (Paris, 1899); Rambaud, *History of Russia from the Earliest Times* (3 vols., 1879-85); Seignobos, *A Political History of Contemporary Europe*, translation (London, 1900); Thompson, *Russian Politics* (London, 1895); Tikhourirov, *Russia, Political and Social* (2d ed., London, 1892); Mahon, *The Problem of Asia* (Boston, 1900).

RUSSIAN BAPTISTS: members of a political and social faction in Russia, known also as STUNDISTS. Originally the Stundist movement was religious and would have remained thus except for government interference. The orthodox priests, aided by the police and the courts, entered upon a vigorous campaign of persecution, with the result that the Stundist movement developed into political and social radicalism. From association with their foreign brethren, the Russian Baptists gained some knowledge of the political institutions of other countries where the state does not interfere with the religious beliefs of its citizens. There are among them moderate liberals, with whom the paramount issue is the separation of the church from the state and a constitutional government, as a guarantee of religious and civil liberty.

RUSSIAN CHURCH: community of Christians subject to the emperor of Russia, using the Slavonic liturgy, and following the Russian rite. Christianity was introduced into Russia in the 9th c. (see OLGA); but it was not till the end of the 10th that the foundation was regularly laid. In the great schism between the churches of Constantinople and Rome, the R. C. naturally followed silently in the train of Constantinople; yet, at the time of the Council of Florence (1439), the adherents of the Roman Church throughout Russia were as numerous as those of the Greek party. The complete separation of the R. C. from Rome was effected in the latter part of the same century.

For more than a century from this date, the R. C. continued directly subject to the patriarch of Constantinople; but 1588 the patriarch Jeremias, being in Russia, held a synod of the Russian bishops, and erected the see of Moscow into a patriarchate, with jurisdiction over the entire territory; this decree being confirmed by a synod at Constantinople. This dignity, however, was subordinate to the patriarch of Constantinople, and the subordination was acquiesced in till the reign of Alexei Michailowitch, father of Peter the Great, when the patriarch of Moscow, Nikon, refused to acknowledge it further. The pretensions of this prelate and of his successors, however, gave offense to the czar, and one of the first among the great schemes for reorganization of his empire, conceived by Peter the Great, was the direct subordination of the church to the headship of the emperor. On the death of the patriarch Adrian, 1700, he did not fill the vacant dignity, but appointed in the mean time as acting director of ecclesiastical affairs a bishop, with the title Exarch. After an interval of 20 years, the public mind having been taught to forget the patriarchate, that office was formally abolished 1721; and the permanent administration of church affairs was placed under the direction of a council, called the 'Holy Synod,' or 'Permanent Synod,' consisting of abp., bps., and archimandrites, all named by the emperor. Under direction of this council, a series of official acts and formularies, and catechetical, doctrinal, and disciplinary treatises was drawn up, by which the whole scheme of the doctrine, discipline, and church govt. of the R. C. was settled in detail, and to which all members of the clergy, and all officials and dignitaries, are required to subscribe. The leading principle of the new constitution thus imposed is the absolute supremacy of the czar; and to mark still more signally the principle that the crown is the source of all church dignity and of all ecclesiastical jurisdiction, the arrangement of provinces, archbishoprics, and bishoprics was completely changed; the old metropolitan sees, as they became vacant, were filled with simple bps., not with abps. as before; and a new arrangement of archbishoprics was established, partly by act of the czar himself, partly by interposition of the Permanent Synod.

The constitution of the R. C. established by Peter has been maintained in substance to the present time. The Holy Synod is one of the great departments of the govt., the minister of public worship being *ex officio* a member. One of the most cherished objects of the traditional imperial policy of Russia has been to effect uniformity of religious profession throughout the empire. Dissent in all its forms has not only been discouraged, but in many cases rigorously and even cruelly repressed; and as the Rom. Cath. dissentients from the R. C. form the most numerous and the most formidable class, they have generally, but more particularly under Czar Nicholas, been the object of especial severity.

As regards doctrine, the R. C. may be regarded as identical with the common body of the GREEK CHURCH (q.v.). With that church, the R. C. rejects the supremacy of the pope, and the double procession of the Holy Spirit (see FILIOQUE). All the great characteristics of its discipline, too, are the same; the differences of ceremonial which exist, though in many cases considered by the Russians themselves of vital importance, being in themselves unimportant. On one point some explanation may be required: the liturgy of the R. C. is the same as that of the Church of Constantinople; but it is celebrated not in the Greek, but in the Slavonic language. The service-books, however, are not in modern Russian, but in the ancient languages, such as when they were originally translated, except the modification which they underwent at the time of the patriarch Nikon (see RASKOLNIKS: PHILIPPINS), and the further revision under Czar Peter. The discipline as to the marriage of the clergy is the same as that described for the Greek Church; and in carrying out the law which enforces celibacy on bishops, the Russians adopt the same expedient with the Greeks—viz., selecting the bishops from among the monks, who are celibates in virtue of their vow.

Besides the established R. C. there exists also in Russia a considerable body of dissenters of various kinds. For one class of these, see RASKOLNIKS. But by far the most numerous dissenters are the Rom. Catholics, chiefly in Poland and White Russia. At the partition of Poland, a special provision was made for the Rom. Cath. people of Poland, under the new govt., by the erection of an archbishopric in communion with Rome, at Mohilev 1783; and the organization was still more formally completed by the czar Paul, who established 1798 five bishoprics under that metropolitan see; and the arrangements of the Congress of Vienna having somewhat deranged these ecclesiastical dispositions, a new arrangement was entered into by Pius VII. 1818. But it cannot be doubted that the whole policy of the Russian govt., in reference to the church, makes it almost impossible that they should permit free exercise of worship and of thought to the Catholics in communion with Rome. The direct legislation, and still more the prac-

tical administration of Russia in Poland, in reference to marriage, to church property, to conventual establishments, and to ecclesiastical regulations generally, has been a policy of repression and of compulsory proselytism. This policy has been more sedulously pursued since the recent reorganization of Poland. In 1867 the archbishopric of Warsaw was abolished, and all the Rom. Catholics of the empire were made subject to the abp. of Mohilev.

The govt. appropriates annually about $5,500,000 for the support of the Holy Synod.—For numbers of adherents to various creeds, see RUSSIA.

RUSSIAN LANGUAGE AND LITERATURE: principal Slavic language and literature.—Russian, as a member of the Slavic family of languages, became a written language first in the time of Peter the Great, till which period the Old Slavic—the language of the church—had been the only medium of literary expression, and had, in consequence, exercised important influence on the Russian popular speech, as on that of other Slavic dialects. The Mongol conquest, and the preponderance of Polish elements in w. parts of the empire, also introduced into the Russian language a great number of Mongolian and Polish expressions; in addition to which, the efforts of Peter the Great to give his subjects the benefits of western culture enlarged the Russian vocabulary, especially in arts and industry, with numerous German, French, and Dutch words. The chief characteristics of Russian, as a language, are simplicity and naturalness. The grammatical connection of sentences is slight, and the number of conjunctions scanty. Perspicuity and expressiveness are obtained by the freedom allowed in placing of words. Auxiliary verbs and articles there are none; while personal pronouns may or may not be used with verbs. The vocabulary of Russian is very rich—foreign words being Russianized. The capability of the language for forming compounds and derivatives is so great, that from a single root not less than 2,000 words are sometimes derived. The purest and most grammatical Russian is spoken in the centre, about Moscow. The oldest Russian Grammar is that of Ludolf (Oxf. 1696); others are the Grammars of the St. Petersburg Acad. (1802), of Gretsch (Petersb. 1823; new ed. 1834), and of Vostokov (10th ed. Petersb. 1859). *A Russian Grammar for Englishmen* was pub. St. Petersburg 1822; another (by Heard) 1827. The best Dictionaries are those of the Russian Acad. (4 vols. Petersb. 1847), of Heym (1803–05), of Schmidt (Leip. 1815), Oldekop (4 vols. 1825) Sokolov (Petersb. 1834), Reiff (1862), Paulovski (1859). There is an English-Russian grammar and dictionary by Constantinoff (3 vols.).

The beginnings of Russian literature are contemporaneous with the introduction of Christianity by the missionaries Cyril (q.v.) and Method, who employed the Old Slavic church-tongue for literary purposes. To this

earliest period belongs—besides the *Prawda Ruskaja*, a book on law—the noted history or chronicle of Nestorius. After the subjugation of Russia by the Tartars, knowledge withdrew into the shelter of the monasteries, whence proceeded several important historical works. During this foreign domination, the Russian people seem to have sought consolation and hope in writing patriotic ballads and songs about their great hero-king, Vladimir—the Russian Charlemagne; the most celebrated of which is *Igor's Expedition against the Polowzi* (Berl. 1855). When at length the country was freed from Mongol oppression by Ivan I., 1478, Russian literature received fresh impulse; but so tardy were its motions, so circumscribed its achievements, that, till the 18th c., the only notable names are the metropolitan Makarius (d. 1564), who wrote *Lives of the Saints*, etc.; Zizania, author of a Slavic Grammar (Wilna 1596); and Matviejev (17th c.), who composed historical and heraldic works. The czar Alexei Michailowitch (whose prime-minister Matviejev was) caused a valuable collection of Russian laws to be printed 1644, and founded an acad. at Moscow, in which grammar, rhetoric, poetry, dialectics, philosophy, and theology were taught. But from political causes, the Polish element then began to predominate in Russian literature, and continued so, more or less, until the time of Peter the Great, who made his native language the universal vehicle of communication in business and writing. He established schools and founded the St. Petersburg Acad. During his reign, the metropolitans Demetrius (1651–1709) and Javorskij (1658–1722); the abp. Prokopovitch (1681–1736); Sellij (d. 1746); the national historian Tatishshev (1686–1750); the poet Kantemir; and the Cossacks Klimovskij and Danilov were the most distinguished supports of literature. The first to place on a firm basis the Russian metrical system was Trediakovskij (1703–69). In the period that followed the death of Peter, the writer that exercised the strongest influence on Russian literature was Lomonossov, who first drew the lines of distinction sharply between Old Slavic and Russian, and established the literary supremacy of the dialect of Great Russia. Among his successors, the poet Sumarokov (1718–77) did service in development of the Russian drama; so did Kniashnin (1742–91), whose pieces still keep their place on the Russian stage; while Wizin (1745–92) ranks as one of the first prose writers of his age. Some of his prose comedies are full of genuine humor.—Other notable names in poetry, belonging in whole or part to this period, are Cheraskov, Oserov, Prince Michailovitch, Dolgoruki, Chvostov, Petrov, Bogdanovicz, and Derzawin (q.v.), the first universally popular Russian poet. Prose literature, however, developed itself more slowly. Lomonossov was long the model. Among the first to make a fresh reputation were Platon, metropolitan of Moscow, and Lewanda (1736–1814), archpriest of Kieff, who distinguished themselves from their bombastic

brethren by the vigor of their thinking; the historians Schtsherbatov (1733–90), Boltin (1735–92), and Muraviev (1757–1807). Still more important, in the same department, were the labors of the German Gerh. Friedr. Müller, native of Westphalia, who, 1755, established at St. Petersburg the first literary journal. Novikov (1744–1818) gave stimulus to the book-trade and to literary productivity, partly by his professional zeal, partly by publishing a satirical journal, *The Painter*.

A new epoch in Russian literature commenced with Alexander I., who was enthusiastic for education and progress. The number of universities was raised to seven; learned societies also were increased. The great ornament of literature at this period was Karamzin (q.v.), who freed it from the trammels of the pseudo-classicism within which it had been confined by Lomonossov. His labors were continued by Dmitriev and Batjushkov, while Shishkov combated with success the tendency to deprive the language of its Slavic character; and in the poetry of Shakovski, the national elements reasserted themselves. With these may be mentioned the historian Bolchovitihov (1767–1837) and the theologian Drosdov, Abp. of Moscow; the poets Koslov, Prince Alexander Shachovski (d. 1846), one of the best comic authors of Russia, and of amazing fertility; Gribojedov, Glinka, Prince Vjasemski (b. 1792), celebrated song-writer, elegist, and critic; Davidov, and Gnieditsh. Mersljakov, who died a prof. in Moscow, was a very able critic; while Chemnicer (1744–84) and Krylov (1768–1844) rank first among the original fabulists of Russia. Bulgarin and Gretsch belong rather to the most recent period of Russian literature—a period characterized by predominance of Russian influences, and complete absorption into the one national spirit of all minor and foreign elements. The czar Nicholas labored with his wonted passionate energy in this direction. Among the poets of this thoroughly Russian period, the most conspicuous and brilliant is Pushkin (q.v.), whose verses are a mirror of Russian life, in which are shadowed forth the joys and griefs, the humor and the patriotism, of the true Russian peasant. The most remarkable of Pushkin's contemporaries and successors are the poets Baratynski (d. 1844), Baron Delvig, Benediktov, Podolinski, Lermontov, N. Minski, Mereshkovski, Frug, and Nadson, the poet of melancholy and pessimism; the dramatists Nikolaus Polevoi and Nestor Kukolnik, who drew the matter of their dramas from the national history; and Gogol (q.v.). one of the most illustrious names in Russian literature. —Russian novels exhibit a condition of society in which barbarism struggles for supremacy with a superficial civilization: the best writers in this department are Bestushev, Bulgarin, Sagoskin, Vasili Ushakov, author of *Kirgis-Kaisak*, etc.; Count Solohub, whose novels give a graphic picture of St. Petersburg society; Prince Odoievski, Baron Theodor. Korff, Konst. Masalski, and

Senkovski (reckoned one of the first journalists in Russia); Dostoievsky and Pisemski, both of whom died 1881; Turgeneff (q.v.), known by numerous French and English translations; Alexander Hertzen (q.v.), the 'liberal Russian' exile; Gontsharov, Saltykov, Count Leo Tolstoi (q.v.), Uspenski, Danilevski, Count Salias, B. Markewitch, and others.—The delineations of Cossack life are too numerous for special notice, but they constitute a distinct section of the literature of Russian fiction, and are composed for the most part in the dialect of Little Russia.—Great attention has been given in Russia, as in all Slavic countries, to popular songs and proverbs: the principal collections of these are by Novikov, Kashin, Maximovitch, Makarov, and Sacharov. —The later developments of Russian literature have been chiefly in the department of history, and among the most distinguished names are those of Prof. Ustrialov of St. Petersburg, Prof. Pogodin of Moscow, Polevoi, Vasili Berg (d. 1834), Lieut.Gen. Michailovski Danilevski, Prof. Snjegirev, Sreznevski, Slovzov, Samailov, Solovjev, Strovjev, Neverov, Arszenjev, Wesselovski, etc. The study of the history of Russia has been greatly promoted by the Russ. Hist. Soc. and the archeological institutes of St. Petersburg, Kieff, and Wilna.—Such philosophy as exists in Russia is an echo of the modern German and English schools, and therefore lacks originality.—Advances in theology are hardly to be looked for as yet from a church so deeply sunk in ignorance and intellectual stupor as the Russian, yet nowhere is reform more urgently required: the religious writings of Count L. Tolstoi (q.v.) are designed to awaken the minds of the people to one of the departments of social ethics in Christianity: but such writings are not allowed to be printed in Russia.—As writers on jurisprudence, Nevolin, Moroshkin, Spassowitsh, D. Meyer, deserve mention; among mathematicians, Simonov, Perevoshtshikov, Wesselovski, Tshebyshev, Savitsh; among physicists, Turtshaninov, Metshnikov, Sokolov, Kutorga, Koksharov, Kessler, Annenkov; and as linguists, Vostokov, Biliarski, Buslajev, Jagiés, Lawanski.—See Otto, *Text-book of Russian Literature* (Leip. 1837; transl. into Eng. by Cox, Oxford 1839); Jordan, *History of Russian Literature* (Leip. 1846); Talvi (Mrs. Robinson), *View of Literature of the Slavic Nations* (1850); Courrière, *Histoire de la Littérature Contemporaine en Russie* (Paris 1875); K. Haller, *Geschichte d. Russ. Litteratur* (1882); A. Reinholdt, *Gesch. d. Russ. Litt.* (1885).

RUS'SIAS, ALL THE: official designation of the Russian empire in Europe; assumed 1654, when Czar Alexei Mikailowitch styled himself for the first time 'Tzar of All the Russias,' after his conquest of Little Russia and acquisition of Smolensk from Poland. This phrase at first included only Great Russia, White Russia, and Little Russia.—*Great Russia*, formerly Muscovy, by far the largest of these three divisions, includes the territory

now comprehended in the 19 govts. of Archangel, Olonetz, Vologda, Novgorod, Tver, Jaroslav, Kostroma, Pskov, Smolensk (partly), Moscow, Vladimir, Nijni Novgorod, Kalouga, Toula, Riazan, Tambov, Orel, Koursk, and Voronetz.—*White Russia* included the provinces of Vitebsk, Mohilev, and the rest of Smolensk, and though long held by the Poles, was re-united to Russia at the first and second partitions of Poland (1772 and 93). In 1793, it received the accession of the Polish provinces which now form the govts. of Vilna, Minsk, Kovno, Volhynia, Podolsk; and White Russia with these accessions was then denominated *West Russia.—Little Russia* contains the ancient Russian possessions in the s.w., which, in the middle ages, became independent under the Cossacks of the Ukraine, and were finally reunited to Russia 1654; and is divided into the four provinces, Kiev, Tchernigov, Poltava, and Kharkov.—During the 18th c., the countries between Great Russia and the Black Sea wrested from the Turks, were formed into a fourth great division, under the name *Southern Russia:* this includes the districts occupied by the Don Cossacks, sometimes called *New Russia.—Red Russia* was a portion of the Russian principality of Galich (Galicia), and with the rest of it, was subdued by Casimir III. of Poland; it included what is now the province of Lublin, in the kingdom of Poland, and the e. portion of Austrian Galicia, and is inhabited by Poles, and another and antagonistic people, called Russniaks (q.v.).

RUSSNIAKS, *rŭs'nĭ-ăks*, also RUSSINE and RUTHENI: variety of peoples who form a branch of the great Slavic race, and are sharply distinguished from the Muscovites, or Russians proper, by their language and the whole character of their life. They are divided into the R. of Galicia, N. Hungary, Podolia, Volhynia, and Lithuania, and are estimated by Schafarik to number 13,000,000. Almost all are agriculturists, and on the whole rather uncultivated. Before the 17th c., they were a free race; but were then subjugated, partly by the Lithuanians, partly by the Poles, and for a long time belonged to the Polish kingdom. Their language has consequently become closely assimilated to the Polish. In earlier times it was a written speech, with distinctive characteristics, as is seen from the translation of the Bible, pub. at Ostrog 1581, and other literary monuments. The R. belong mostly to the United Greek Church, but in part to the Non-united. They preserve many old customs peculiar to themselves, and much folk-lore, prose and poetic, like that current in Poland and Servia. Of late the name *Ruthenians* has been reserved chiefly for the Slavonian inhabitants of Austria, on both sides of the Carpathians; and distinguishes them from their kinsmen, the Little Russians of Russia. Dislike to Poland has led them to incline to the Russian language. In 1880, there were nearly 3,000,000 R. in Austria.

RUS'SO-GER'MAN WAR: name given by German historians to the last stage of the great European war against Napoleon, beginning with the Russian campaign of 1812 and ending on the field of Waterloo: see NAPOLEON.

RUSSO-JAPANESE WAR: (see JAPAN, TOGO and RUSSIA): The Mikado's govt., 1904, Feb. 6, severed diplomatic relations with Russia, recalled the Japanese minister at St. Petersburg, and the next day occupied the port of Masampo, Corea, and began landing troops there. The first act of war that ensued was the destruction, Feb. 8, of the Russian cruiser *Variag* and the gunboat *Korietz* in the Corean port of Chemulpo, after an hour's engagement, by a squadron commanded by Admiral Urik. The same night, Feb. 8-9, the Russian battleships *Retvizan* and *Czarevitch* and the cruiser *Pallada* were disabled by Japanese torpedo boats at the entrance to the harbor of Port Arthur. After this action the Japanese fleet hovered in the vicinity of Port Arthur, blockading it and at intervals bombarding the Russian works. Heroic attempts were again and again made to close the entrance channel by sinking at its mouth stone-laden hulks, and by sowing mines; but ineffectually, as was later proved when Russian battleships and cruisers sallied out repeatedly to harass the enemy, or to escape from the beleaguered harbor and join the Russian naval force at Vladivostok. Meanwhile Japanese troops in transport fleets escorted by warships were landing at various points in Corea, and marching northward to the Yalu r. and the Manchurian frontier; the Russians too were massing troops on the Yalu, and occupying positions in n. Corea. A Japanese squadron of five battleships and two cruisers bombarded the defenses of Vladivostok March 6, but without serious effect; in this action the Russian warships in the harbor took no part. At Port Arthur the Russian naval commander-in-chief, vice-adm. Makaroff, demonstrated the inefficiency of the obstruction of the channel entrance when, March 26, with a squadron of battleships and torpedo boats he issued out and made a reconnoissance of the islands in the neighborhood of the stronghold. He afforded the Japanese admiral Togo the opportunity for a test of strength; but this Adm. Togo declined, sailing way precipitately. But the Japanese squadron returned to its former station, and March 31 sank four merchant ships in the w. entrance channel. Still the Russian ships passed in and out. But in the night of April 12, Adm. Togo planted mines in the harbor mouth, and the following morning stationed a weak squadron outside the port to invite a sally by the Russians, while he himself, with his main force, veiled by fogs, lay off, prepared to attack the Russians at sea if they should succeed in evading the mines. Makaroff with the *Petropavlovsk*, *Poltava*, and *Pobieda*, battleships, and the *Diana*, *Askold*, *Bayan*, and *Novik*, cruis-

ADMIRAL TOGO'S FLAGSHIP MAKASA IN ACTION.

ers, sailed out; clearing the mines, and headed for the enemy's squadron. The fog having been dissipated, Togo's fleet was descried, and Makaroff put about at full speed for Port Arthur. The *Petropavlovsk*, with the admiral and about 600 officers and seamen aboard, struck a mine and almost instantly sank. The admiral and his guest, the illustrious painter Verestchagin, were among the lost. The cruisers *Pobieda* and *Bayan* were disabled, but were brought into the harbor. Toward the end of April the first Japanese army, under Gen. Kuroki, confronted the Russian force on the Yalu r., the Russians occupying strongly fortified positions on the right bank of the river and in the hills. The Japanese left, resting on Wiju, was supported by a flotilla of gunboats, and the army had a perfectly equipped pontoon train. After four days of the hardest possible fighting, the Japanese took by storm the entire line of the Russian defenses, compelling their enemy to retreat with a Russian loss of 2,397 killed and wounded, and 28 quick-firing guns; in this action and in every subsequent action in several months the superiority of the Japanese artillery was demonstrated, as also the high efficiency of the Japanese military administration and the discipline and fearless valor of the troops. The Russians retreated to Fengwang-cheng, and that position having proved untenable, to Liao-yang. May 4, Japanese transports with troops convoyed by warships, made a landing at Pitsewo, n.e. of Port Arthur on the e. coast of the peninsula; and this force, marching westward severed Port Arthur's railroad and telegraph communications with the Russian commander-in-chief. Other landings of troops on both sides of the peninsula were successively made in the rear of Port Arthur. The Russians destroyed their new city of Dalny, blowing up the breakwater and the piers and great buildings to save them from capture. May 26, after three days of desperate fighting at Kinshow, Nanshan hill, and Talienwan, about 30 m. n. of Port Arthur, the Russians were driven out of those strongly fortified positions and driven back within the immediate fortifications of their great stronghold. In the meantime the Russian army of Manchuria having fallen back on Liao-yang, the Japanese armies under Gens. Oku, Nodzu, and Kuroki captured and occupied the important passes Ma, Motien, and Fenshu on their lines of approach to Liao-yang. There 240,000 Japanese faced 200,000 Russians; and after six days and nights of continuous fighting the Russian army was forced to evacuate the place and retreat across the Tai-tse r., Sept. 1. The Japanese harassed the Russians in the retreat toward Mukden, but Gen. Kuropatkin halted at the Hun r., and Oct. 10 made a general advance against the enemy. Again there was a great battle continued several days, and Kuropatkin was again beaten back across the Sha r. There the hostile armies faced each

other at close quarters, with frequent artillery duels, and till far into the winter, when military operations on a great scale were suspended till the coming of spring. In the meantime fort after fort of the immediate defenses of Port Arthur was captured by the Japanese, and on Aug. 10, the Russian fleet was ordered to fight its way out, and if possible, to eseape; but in the attempt was hopelessly erippled by Adm. Togo, the Russian Admiral Wittshoef, being among the killed, the vessels being scattered baek to Port Arthur, or foreed to seek shelter in neutral ports; one at Chefoo, resisting a Japanese search party, was seized and taken out, but sank, while the *Novik* escaping to Sakhalin, was followed by two Japanese cruisers and destroyed. Four days later, the Vladivostok squadron which had been busy in destructive raids on transports and fishing vessels, was eaught by Adm. Kamimura on Aug. 14, seeking to eo-operate with the sortie of the Port Arthur fleet, and was almost annihilated. Heneeforth, the besieged garrison at Port Arthur made desperate efforts to eheek the persistent advance of their foes, but on Dee. 5, the Japanese took by storm 203-Meter hill, with the loss, it was roughly estimated, of 15,000 men. Having planted on this hill their heaviest guns, they were able to bombard the eity, sinking several ships in the harbor and rendering all positions untenable. Finding further resistanee useless, Gen. Stroessel eapitulated Jan. 2, 1905, and surrendered to Gen. Nogi, the successful Japanese eommander. The siege had lasted eleven months, and the records of its great land and sea battles are among the most thrilling in military history. The fall of Port Arthur and the destruetion of the Russian Asiatic fleet released Adm. Togo's squadron from blockading duty, and enabled him to make his battleships and cruisers available for use against the arrival of the Russian Baltie fleet, commanded by Adm. Rojestvensky (q.v.). The Baltie fleet, after embroiling Russia with Great Britain by firing upon a fishing-fleet in the North Sea (Oct. 22-23). wintered at Nossi-Bé, Madagasear, taking advantage of French neutrality.

Early in March, 1905, Oyama resumed offensive operations and by strategie flanking, sought to surround Kuropatkin (q.v.) at Mukden, and cut off his retreat to Tie Pass. Fighting began Mar. 6, and the first attaeks of the Japanese were savagely resisted by the Russians. On Mar. 8, however, Gen. Oku, with an immense force, menaced Mukden on the northwest and Kuropatkin ordered an immediate retirement on Tie Pass. The retreat degenerated into a scramble in which great guns, ammunition, arms, rations and other war material were abandoned; the Japanese, all the while harried their retiring foes, Gen. Kuropatkin, with a strong rear-guard, covering the retreat and managing to elude the flanking trap set for him. The pursuit did not end until Mar. 12. The loss on both sides was

estimated at 200,000. In announcing his defeat and retreat, Gen. Kuropatkin asked to be relieved of his command and was succeeded by Gen. Linevitch, Mar. 16.

On the same date Rojestvensky left Madagascar and crossing the Indian Ocean, arrived in the Strait of Malacca at the beginning of April, being reported as passing Singapore Apr. 8. Entering the South-China Sea, he sailed to French Indo-China, where he made extensive use of the ports to recoal and refit, again to the straining of French neutrality and the latter's relations with Japan. Finally receiving orders to leave, he sailed north. It was thought probable that he would skirt the eastern coast of Japan, and passing either through Tsugaru or La Pérouse straits, so enter the Sea of Japan and arrive at Vladivostok, avoiding the Japanese fleet under Adm. Togo (q.v.), whose main base was supposed to have been established on the north coast of Formosa. Instead, he courageously adopted the boldest and shortest course, attempting to push directly through the Tsu-shima or Corea Strait to reach Vladivostok, which is about 640 miles due north of the Tsu islands. His approach was discovered in a lifting fog, on Saturday, May 27, 1905, by Adm. Togo's scouts. Adm. Togo's base all the time had been at Masampo, Corea, opposite the Tsu islands. Rojestvensky's fleet when sighted was s.w. of the Hirodo Islands, heading for the e. channel in two lines, the starboard comprising eight heavy battleships, the port made up of cruisers and repair ships, and both flanked by torpedo-boats and destroyers. The Japanese fleet steamed out rapidly to meet the enemy, its inner line held by Togo with the battleships and Kamimura with the cruisers; s.e. of Tsu Island, Togo made a turning movement and by this maneuver placed himself on the w., the Russians being on the e., and in the eye of the sun. The first shot fired from Adm. Rojestvensky's flagship and was almost simultaneously replied to by Adm. Togo's battleship. Adms. Kataoka and Yamada then attacked the Russian lines with their light squadrons and were followed by Adm. Kamimura, who fell southward to intercept any chance of escape in that direction. Adm. Uriu, near Iki island, burst upon the third Russian line, raking it again and again, and early in the battle two shells from Adm. Togo's flagship sank the Russian repair-ship *Kamchatka*. A terrific running fight ensued while the two fleets forged along on parallel lines. The strength of both in number of ships and armament had been estimated at about equal; the superiority of the Japanese lay in 11 months of hard fighting, continuous practice in warfare, and the choice of the battle ground. The fight raged all Saturday, was continued through the night and on Sunday, Monday being occupied by the Japanese in the pursuit of the few survivors. Of thirty-six Russian vessels which entered the Strait of Corea, four only, two cruisers and two destroyers, reached Vladi-

vostok. Adm. Togo, in six brief reports to the Tokio government, summarized the overwhelming victory which showed that, six Russian battleships, five cruisers, two special service ships, three destroyers, and one coast-defense ship were sunk, and two battleships, two coast-defense ships, and one destroyer were captured for addition to the Japanese navy. Over 4,000 prisoners were taken, including Adms. Rojestvensky and Nebogatoff: Adm. Voelkersam was among the dead, which with the missing were estimated at 7,000. The total Japanese loss as issued by the govt., was three torpedo-boats sunk, three officers killed, 113 men killed and 424 wounded. On May 30, Adm. Togo telegraphed to Tokio: 'The naval battle fought from the afternoon of May 27 to May 29 in the vicinity of Okino Island and extending to the vicinity of Urleung Island is called THE NAVAL BATTLE OF THE SEA OF JAPAN.' See ROJESTVENSKY.

Operations on land were once more begun, the Japanese inflicting heavy loss on the Russian forces, and after capturing Liao-yang Wo Peng on June 16th continuing to drive them north toward Harbin. On the 7th of July the invasion of the Island of Saghalien was begun and after several sharp engagements the governor with 70 officers and 3,200 men surrendered on the 31st. On the 17th of July a force was landed on Olga Bay north of Vladivostok, and on the 4th of August a fleet began the blockade of Peter the Great Bay, with the object of the capture of Vladivostok, but peace was arranged before any further action was taken. Aside from some desultory fighting along the outposts of the two armies in Manchuria no engagement of any importance was reported and the war was practically ended.

In the meantime President Roosevelt had in the early part of June succeeded in bringing about a peace conference between the two warring countries which finally resulted in the Treaty of Portsmouth.

Baron Komura and Minister Takahira were selected as plenipotentiaries for Japan, and Serge Witte and Baron Rosen, Minister to the U. S., were appointed by the Czar of Russia. After several meetings at the Portsmouth Navy Yard the plenipotentiaries came to a complete understanding on the 29th of August, and the treaty was drafted and signed by the respective parties on the 5th of September. Several deadlocks occurred on indemnity and the cession of the Island of Saghalien, but with characteristic generosity and bravery, and with the desire that nothing should stand in the way of peace, the Japanese waived all claims to indemnity and agreed to the cession of Saghalien below the 50th degree of north latitude. Russia ceded the railways and the major portion of the territory in the possession of the Japanese, and both parties agreed to withdraw their troops within 18 months.

The treaty consists of 15 articles with two sub-articles to articles 3 and 9, and was ratified and signed

by the Emperor of Japan and the Czar of Russia on October 14th. There was much excitement in Japan over the terms and the plenipotentiaries were severely criticised, but finally the conservative element prevailed and the terms accepted with much satisfaction.

RUST, n. *rŭst* [Ger. and Sw. *rost;* Dut. *roest,* rust]: coating formed on most metals when exposed to the air or moisture; reddish matter formed on iron or steel—red oxide of iron; loss of power or ability by inactivity or want of use; foul or extraneous matter; disease in plants (see below). V. to gather rust or extraneous matter; to become rusty; to lose ability or power by want of use; to degenerate in idleness. RUST'ING, imp. RUST'ED, pp. RUSTY, a. *rŭst'ĭ,* covered with rust or extraneous matter; surly; impaired by inaction or neglect of use; rough; having the appearance of rust and a rancid flavor, as bacon. RUST'ILY, ad. *-ĭ-lĭ.* RUST'INESS, n. *-nĕs,* the state of being rusty.

RUST: disease of plants, which shows itself on the stems and leaves of many plants, and on the ears of grasses, both of the cereal grasses, and of many pasture or forage grasses; in brown, yellow, or orange-colored spots; and after destroying the epidermis of the plant, assumes the form of a powder, which soils the fingers when touched. Rust seems to consist at first of small fungi of one cell, sometimes divided by a transverse wall, belonging chiefly to genera *Uredo* (q.v.) and *Puccinia* (q.v.); which, finally, breaking through the diseased epidermis, form a colored dust of mere spores. The name rust is sometimes restricted to the *Uredo rubigo vera.*—Rust is sometimes very injurious to crops. No remedy is known for it; but it is thought that rank manures tend to produce or aggravate it. See UREDO.

RUSTIC, a. *rŭs'tĭk* [F. *rustique,* rustic—from L. *rustĭcŭs,* belonging to the country, rural—from *rus,* the country: It. *rustico*]: pert. to the country; rural; having the manners of those living in the country; plain; rude; untaught; awkward; unadorned: N. an inhabitant of the country; a peasant. RUS'TICAL, a. *-tĭ-kal,* rough; rude. RUS'TICALLY, ad. *-lĭ.* RUS'TICALNESS, n. *-nĕs,* the quality of being rustical. RUSTICITY, n. *rŭs-tĭs'ĭ-tĭ,* rustic manners; simplicity. RUSTICATE, v. *rŭs'tĭ-kāt,* to dwell or reside in the country; to banish from a university or college for a time. RUS'TICATING, imp. RUS'TICATED, pp. RUS'TICA'TION, n. *-kā'shŭn,* residence in the country; state of being rusticated (in *arch.,* see below). RUSTIC CHAIR, a chair or seat made of the undressed branches or boughs of trees, or made to resemble such.—SYN. of 'rustic, a.': inelegant; rough; coarse; savage; unpolished; unadorned; artless; honest; simple; plain; awkward; untaught; rural;—of 'rustic, n.': peasant; clown; countryman; hind; swain.

RUS'TIC, or RUS'TICATED, WORK, and RUSTICATION: kind of masonry in which the various stones or courses

are marked at the joints by splays or recesses. The surface of the stone is sometimes left rough, sometimes polished or otherwise dressed. Rustic work is used chiefly in classical or Italian architecture, though rustic quoins are often used in rough Gothic work.

RUSTLE, v. *rŭs'l* [Low Ger. *russeln;* Ger. *ruscheln,* to rustle: Sw. *rusta,* to move with a slight noise—an imitative word]: to make a low rattling noise, as in the rubbing or movement of silk, dry leaves, etc. RUSTLING, imp. *rŭs'lĭng:* ADJ. making a low, slight sound, as of silk cloth when shaken or rubbed: N. a quick succession of low, short sounds, as of a rubbing or moving among leaves or dry straw. RUS'TLED, pp. *-ld.* RUST'LER, *-lėr,* one who rustles.

RUSTRE, *rŭs'tr,* in Heraldry: one of the subordinaries consisting of a lozenge (q.v.) with circular opening pierced in its center.

RUT, n. *rŭt* [OF. *ruit* or *rut,* the lust of deer or boars; *ruir,* to roar—from L. *rugīrĕ,* to roar: Bret. *ruda,* to be on heat: Swiss, *rüden,* to bellow: Sp. *ruido,* noise, uproar]: the engendering or copulation of deer or boars: V. to engender, as deer. RUT'TING, imp. RUT'TED, pp. RUT'TISH, a. *-ĭsh,* lustful; wanton.

RUT, n. *rŭt* [Fr. *route* (see ROUTE)]: the track of a wheel; a line cut in the soil with a spade: V. to cut into ruts, as a road; to cut a line on the soil with a spade. RUT'TING, imp. RUT'TED, imp. RUT'TY, a. *-ĭ,* full of ruts.

RUTA, n. *rô'tă* [L. *ruta;* Gr. *rhūtē*, the herb rue]: a genus of plants, ord. *Rutăcĕæ*. **RUTIC**, a. *rô'tĭk*, applied to an acid obtained from cocoanut-oil, butter, etc.; caprio acid.

RUTA-BAGA: see **TURNIP**.

RUTACEÆ, *rô-tā'sē-ē:* natural order of exogenous plants, consisting mostly of trees and shrubs, but containing a few herbaceous plants. The leaves have no stipules, are simple and entire, lobed, pinnate, or decompound, and covered with pellucid resinous dots. The flowers are hermaphrodite, sometimes irregular. The calyx has four or five segments; petals are equal in number to its segments, or lacking, or united into a monopetalous corolla; stamens equal in number to them, or fewer by abortion, or twice or thrice as many. There is a cup-shaped disk. The ovary is sometimes stalked; it has as many carpels as there are petals, or fewer; there are generally two ovules in each carpel. The fruit consists of several capsules, cohering firmly or imperfectly.—There are about 400 known species, natives of warmer temperate and tropical regions. The *Diosmaceæ* are sometimes separated as a distinct order. A bitter taste and powerful odor are general characteristics. Rue, Prickly Ash, Hop-tree, Citron, Orange, and Lemon are examples of the order. See also **ANGOSTURA BARK**: **BRUCEA**. The barks of a number of tropical species, of different genera, possess febrifugal properties.

RUTELA, n. *rô'tĕ-la*, or **RUTILA**, n. *rô'tĭ-la* [L. *rutilus*, inclining to golden yellow]: in *entom.*, typical genus of the *Rutelinæ*, the Goldsmith or metallic beetles, a sub-family of *Scarabeidæ*. The claw-joint of the tarsi is very long, enabling the insects to cling firmly to trees. They are beautifully colored beetles, and nearly all from America.

RUTGERS, *rŭt'gĕrz*, HENRY: 1745, Oct. 7—1830, Feb. 17; b. New York: philanthropist. He graduated at Columbia College 1766; was a capt. in the revolutionary army, and afterward a col. in the N. Y. militia; was a member of the legislature several years, and a regent of the State Univ. 1802–26; owned much land in New York; and gave liberally for public, church, charitable, and educational purposes. See RUTGERS COLLEGE.

RUTGERS COLLEGE: educational institution at New Brunswick, N. J., originally chartered as Queen's College 1766, rechartered 1770, opened 1771, and renamed in honor of Henry Rutgers (q.v.), who gave $5,000 to aid its resuscitation 1825. It was founded by the Dutch to perpetuate their distinctive theol. and forms of worship, and to 'prepare young men for the ministry and other good offices.' Thus it was connected with the Reformed Dutch Church of America from its inception. Its early history was not encouraging. During the revolutionary war its building was burned by the British, and after attempts to keep it in operation in various parts of the state it was closed for six years. In 1784 the gen. synod of the church founded a theol. seminary, which was opened in New York the following year, when J. R. Hardenburgh, D.D., a Dutch clergyman of New York, became pres. of the college. The college was closed for lack of funds 1795–1805. In 1810 by an arrangement between the trustees of the college and the gen. synod, John H. Livingston, D.D., head of the theol. seminary, was elected pres. of the college, and the seminary was removed to New Brunswick. Financial embarrassment again caused the closing of the college 1816–25, when the gen. synod assumed charge of the college as well as of the seminary, and means were provided for placing the college on a substantial footing. In 1864 the gen. synod transferred all its rights in the college grounds and buildings to the trustees, and the institution became an independent literary college. In 1865 the State College of Agriculture and Mechanic Arts with a farm of 100 acres was attached to the college; 1887 the college began receiving an annual appropriation of $15,000 from the federal govt. (under the Hatch act of congress); 1888 the legislature of N. J. appropriated $30,000 for a laboratory for the agricultural experiment station; and 1890 the legislature provided for 240 free scholarships in the scientific school. It became also a beneficiary of the Fayerweather estate to the amount of $100,000. The different courses lead to the degrees of A.B., B.L., and B.S. The students average nearly 250 annually, and the faculty 28. R. C. has a campus of 7 acres, athletic ground of 4 acres, and a farm of 100 acres well equipped with modern apparatus. The buildings on the campus include Queen's College, Fine Arts Building, Van Wert Hall, Geological Hall, Kirkpatrick Chapel and Library (nearly 50,000 vols.), Ceramics Building, Winants (dormitory) Hall, and the Ballantine Gymnasium.

RUTH, n. *rôth* [AS. *hreowan*, to be sorry for, to rue: Ger. *reue*; OHG. *hriuwan*, to mourn: Icel. *hryggr*, sorrowful (see RUE 1)]: in *OE.*, pitifulness; pity; sorrow; regret; mercy. RUTH'FUL, a. *-fûl*, pitiful; tender. RUTH'FULLY, ad. *-li*—are used in poetry only. RUTH'LESS, a. *-lĕs*, cruel; pitiless; insensible to the miseries of others. RUTH'LESSLY, ad. *-li*. RUTH'LESSNESS, n. *-nĕs*, want of compassion; insensibility to the miseries of others.

RUTH, *rôth*, BOOK OF: canonical book of the Old Test., of the Hagiographa, placed in the Authorized Version, as in the LXX., between Judges and Samuel; and in the Jewish canon, as the second of the five Megilloth, following the Song of Songs. It consists of four chapters, and describes how Ruth, the Moabite widow of a Hebrew, Mahlon by name, in the time of the Judges, became—by faithful, loving adherence to her mother-in-law, Naomi, for whose sake she had left her home and kindred—the wife of Boaz, and through him the ancestress of David. A fragmentary genealogy of David's house forms the conclusion of the book, which is characterized throughout by the most naïve simplicity, and minute truthfulness of detail. The book is notable as having for its heroine a 'stranger' to the chosen people, even a Moabite, who was deemed worthy for her virtue to become foundress of the royal house of Israel. Considering that the Book of Kings contains no details about David's genealogy, this book, apart from its indescribable natural charm, becomes a most useful historical record, and further supplies many items on the forms and domestic customs of a time about which we have scant information elsewhere.—The time of the events related is about a century before David, yet both the contents and tendency of the book show that it was written not earlier than the last years of David's reign. For a change had already taken place in the interval in the manners and customs of the people (see the 'in former time,' iv. 7); and the genealogy, carried down to David, shows the theocratic significance that he had acquired when it was written.

RUTHE'NIANS: see RUSSNIAKS.

RUTHENIUM, *rô-thē'nĭ-ŭm* (symbol, Ru.; at. wt., 101.7): metal occuring in platinum ore, and (chiefly) in osmiridium. Of osmiridium one variety is scaly, and consists almost wholly of osmium, iridium, and R.; the other variety contains but a mere trace of R. R. is the most refractory of all metals except osmium, but it has been fused in the hottest part of the oxyhydrogen flame: its density in that state is 11·4; the density of the porous lumps is 8·6. It is more readily oxidizable than silver. The chlorides, oxides, sulphides, and other compounds of R., as well as the metal itself, possess a theoretical rather than a practical interest: they do not enter into the operations of the useful arts. RUTHENIC, a. *rô-thĕn'-ĭk*, denoting an acid.

RUTHERFORD: borough in Bergen co., N. J.; 9 m. from New York City, 7 m. s. e. of Paterson and 8 m. n. of Jersey City, with which and neighboring suburbs it is connected by electric railroads and the Erie System. It is a residential place occupied chiefly by New York business men, and has some fine churches, schools, and a public library. East Rutherford also has a public library, boiler works, mirror factory, bleacheries, etc. Pop. Rutherford (1910) 7,045; of East Rutherford 4,275.

RUTHERFORD, *rŭth'ėr-ford*, GRIFFITH: about 1731–1800; b. Ireland: soldier. He was a 'Locke' settler in w. N. C.; member of the Newberne congress 1775 and of the council of safety; became brig.gen. 1776, June, and commanded a successful expedition against the Cherokee Indians in S. C., in Sep.; was captured by the British at the battle of Sanders Creek 1780, Aug.; and after exchange commanded at Wilmington till the close of the war. Subsequently he was a state senator in N. C., and pres. of the legislative council of the terr. of Tennessee.

RUTH'ERFURD, JOHN: legislator: 1760–1840, Feb. 23; b. New York; nephew of the Earl of Stirling, and grandson of Sir John R. He graduated at the College of N. J. 1776; was admitted to the bar; removed to N. J. 1787, and was member of the legislature and a presidential elector 1788, and U. S. senator 1791–98; served on several state boundary commissions; became pres. of the board of proprietors of e. N. J.; and after 1798 applied himself to agriculture, public improvements, and the care of a large estate.

RUTH'ERFURD (or RUTHERFORD), SAMUEL: about 1600–1661, Mar. 20; b. Nisbet, Scotland: Presb. clergyman. In 1649 he became principal of New College and rector of St. Andrews Univ.; and 1660, in the persecution that followed the Restoration, was deprived of all his offices and ordered to appear before parliament to answer charges of high treason. He died before parliament assembled. His *Lex Rex* was ordered to be publicly burned at the cross of Edinburgh. R. wrote many theol. treaties, and several works on his life and writings have been published.

RUTHERGLEN, *rŭth'ėr-glĕn*, or, by popular abbreviation, RUGLEN, *rŭg'lĕn*: royal, parliamentary, and municipal burgh, in Lanarkshire, Scotland; on the Clyde, three m. s.e. of Glascow. It consists of one long wide street and of several narrow streets or lanes branching from it at right angles. In ancient times it was a place of importance, had large traffic on the river, and comprised Glasgow within its municipal boundaries. Its trade is now dependent mainly on that of Glasgow, and its inhabitants are employed in weaving muslins for Glasgow manufactures, and in the mills, print, chemical, and dye works, and colleries of the burgh and vicinity. Pop. 18,300.

RUTHIN, *rûth'in:* municipal and parlimentary borough of N. Wales, county of Denbigh, eight m. s.e. of the town of Denbigh; on the summit and slope of a hill on the right bank of the Clwyd. The site of the ancient castle, said to have been built in the reign of Edward I., is occupied by a fine modern castellated edifice in Gothic. Pop. 3,000.

RUTHVEN, *rĭv'n*, RAID OF: conspiracy of note in Scottish history, contrived and executed 1582 by William, first Earl of Gowrie, father of the principal actor in the Gowrie Conspiracy (q.v.), in conjunction with Lord Lindsay of the Byres, the Earl of Mar, and the Master of Glammis. The object was to obtain control of the state by seizing the person of James VI., then a boy of 16 under guardianship of the Duke of Lennox and Earl of Arran. The king being by invitation at Gowrie's seat of Ruthven Castle, the conspirators assembled 1,000 of their vassals, surrounded the castle, and obtained possession of James. Arran was thrown into prison, and Lennox retired to France, where he died broken-hearted. The Presb. clergy warmly espoused the cause of the Ruthven lords, who received the thanks of the general assembly, and full indemnity from a Convention of Estates. Nearly a year elapsed before the king regained his freedom. His feigned acquiescence in his position led the confederates so to relax their vigilance that he was enabled to throw himself into the castle of St. Andrews, whose keeper was in his confidence, and thus to become his own master. Gowrie and the other lords made their submission, and were pardoned; but soon afterward a royal proclamation characterized their enterprise as treason. Gowrie was commanded to leave Scotland; but while waiting for a vessel at Dundee, he was drawn into a conspiracy to surprise the castle of Stirling, for which he was tried and beheaded.

RUTILE, n. *rô'tĭl* [L. *rutĭlus*, red, shining]: mineral, essentially *Oxide of Titanium* or *Titanic Acid*, though generally containing a little peroxide of iron. It is of brown, red, or yellow color; and is found massive, dispersed in thin laminæ, and in four-sided or six-sided prisms, which permeate rock-crystal. It is found also in granite, syenite, etc. It is used to give a yellow color to porcelain. RU'TILITE, n. *-īt*, native silicate of titanium and lime, used in painting porcelain.

RUT'LAND: town, cap. of Rutland co., Vt.; on Otter creek; and on the Bennington and Glastenbury, the Bennington and Rutland, the Central Vermont, and the Delaware and Hudson Canal Co.'s railroads; 55 m. s.s.w. of Montpelier, 68 m. s. of Burlington. The tp. was chartered 1761; the town settled by James Mead 1770; and the town, under the name Socialborough, passed to other parties by a grant of the royal gov. of N. Y. 1771. It was the scene of important milit. movements in the revolutionary war; became cap. of Rutland co. 1781; was one of the caps. of the state for many years; and

was the seat of the legislature 1784,92,94,96,97, and 1804. In 1830 the first marble quarry in the vicinity was opened at Sutherland's Falls, and 1838 the first at W. R. The quarries were not worked regularly till 1843, when William F. Barnes bought for a yoke of oxen quarries now worth many million dollars. Since then 16 quarries have been opened and 12 marble mills established in R. and W. R., which produce annually about 2,500,000 sq. ft. of 2 in. marble. Other industries are the car, machine, and repair shops of the Central Vermont railroad; iron foundries; flour-mills; and manufacture of boilers, nails, furniture, cigars, tile and drain pipe, steam stone-channeling machines, and sashes, blinds, doors, scales, bricks, cheese, etc. The chief civic features are the federal building, court house, city hall, memorial hall, the free and Baxter libraries, house of correction, opera house, bank buildings, churches, and graded schools. Electric street railroads connect with the surrounding attractive summer resort region which include the Green Mountains on the east and the Taconic range on the west. Pop. (1890) 11,760; (1900) 11,499; (1910) 13,546.

RUTLANDSHIRE, *rŭt'land-shĕr:* smallest county in England; between Lincolnshire, Northamptonshire, and Leicestershire; greatest length about 20 m., greatest breadth 16 m.; 94,889 acres, or about 148 sq. m. The Wash divides it into two portions, or which the n. is a somewhat elevated table-land, while the s. consists of a number of valleys running e. and w. separated by low hills. The principal streams are the Welland, forming the boundary on the s.e., and its affluents, the Wash and Chater. R. has no manufactures, and its chief mineral production is fine building stone. The climate is mild and healthful, the soil loamy and rich, and there is hardly an acre of waste land. It is not, however, a crop-producing, but a grazing country; and oxen and sheep are reared in great numbers. R. abounds in pleasing scenery, and contains many stately mansions, as well as ecclesiastical remains dating from the Norman period. Pop. 19,700.

RUTLEDGE, *rŭt'lĕj,* EDWARD: 1749, Nov. 23 — 1800, Jan. 23; b. Charleston, S. C.: statesman. He studied law in Charleston and in London; began practicing in Charleston 1773; became member of the first continental congress 1774; signer of the Declaration of Independence 1776; member of the first board of war 1776; delegate to personally consider Lord Howe's proposition for reconciliation, the same year; member of congress 1779; was captured by the British at Charleston 1780; was held a prisoner nearly a year; and after the peace resumed law practice in Charleston. Subsequently he served in the legislature and the constitutional convention, declined the office of assoc. justice U. S. supreme court 1794, and was elected gov. of S. C. 1798.

RUT'LEDGE, John: statesman: 1739-1800, July 23; b. Charleston; brother of Edward Rutledge. He studied law in London, and began practicing in Charleston 1761; was member of the 'stamp-act' congress 1765, the South Carolina convention 1774, the continental congress 1774-5, and the South Carolina convention (where he was chairman of the committee on constitution) 1776; was chosen president of the state council and state commander-in-chief, but resigned 1778; was elected governor 1779, and led the state militia against the invading British and in the North Carolina campaign; was re-elected to congress 1782; appointed chancellor of South Carolina 1784; member of federal constitution convention; appointed judge United States supreme court 1789, and chief-justice of South Carolina 1791; and became chief-justice of the United States supreme court 1795. He sat but one term, and retired because of decline of his mental powers.

RUTTER, n. *rŭt'ėr* [Ger. *ritter*]: a horse-soldier.

RUTULI, *rū'tū-lī:* people who in the earliest times of which either record or tradition exists inhabited a small portion of the coast region of Latium (q.v.). Virgil names Turnus, King of the Rutuli; their capital was Ardea. Of the race-affiliation, language, and history of the Rutuli nothing is known.

RUWENZORI, *rô-wĕn-zō'rē,* or Ruwenjura, *rô-wĕn-jô'râ:* the African 'Mountains of the Moon,' mapped for seven centuries, denied as fabulous of late years, rediscovered by Henry M. Stanley 1889, though in part seen by him 1887-8. The Ruwenzori (a varying native name, translated Rain-maker or Cloud-king) is a range about 100 m. long, nearly under the equator, extending n.e. and s.w., between lakes Albert Nyanza and Albert Edward, n.w. of Victoria Nyanza; and feeding with its melting snows those great head reservoirs of the Nile, 3,500 m. by the course of the river from its mouth. The central third of the range rises above the line of perpetual snow, there 12,000 ft. above Albert Nyanza, and the highest summits, of apparently crater-like form, were estimated to be 18,000 to 19,000 ft. above sea-level. Lieut. Stairs, of the Stanley expedition, ascended 10,677 ft. The dense vapors, from the reeking Semliki valley on the n.w., almost perpetually shroud the range, and have hidden it from the recent African travelers, till the dates mentioned. One of the names applied to the range by natives, Avirika or Avrika, has a surprising likeness to Africa. See Stanley's *In Darkest Africa* (1890).

RUYSBROEK, *royss'brök,* John: Flemish mystic: 1294-1381: b. Ruysbröck, near Brussels. At the age of 15 he abandoned study to live a life of meditation and fit himself for priest's orders. While vicar at Sainte Gudule, Brussels, he gained reputation for saintliness, and his sermons attracted many. Urged to become head of a brotherhood, he retired to Gronendale at the age of 60, and founded a monastery of regular canons. It was

claimed that he knew all mystic theology by inspiration. The most remarkable of his works is *De Nuptiis vel de Ornatu Nuptiarum Spiritualium*. Gerard Groot, Denys le Chartreux, and Aubert le Mire commented on his works. Bossuet considered him one of the ancestors of quietism.

RUYSBROEK, Willem van (Guillaume de Rubruquis): Franciscan friar and traveler: b. Brabant about 1215; d. some time after 1293. He was sent by Louis IX. of France to Central Asia to bring about an alliance with Sartach, a supposed Christian prince of Kiptohak, then at war with the Saracens. In 1253, May, he set out from Constantinople upon his mission with two other Franciscan friars and an interpreter; crossed the steppes, now a part of the Russian province of Ekaterinoslav, reached the banks of the Don, and, after many hardships, the camp of Sartach near the Volga. Refused permission to preach Christianity in Tartary, he made his way across the Caucasus into Armenia, Persia and Asia Minor, reaching Tripoli in Syria in 1255, August. An account of the countries and peoples visited by these missionaries was written by Ruysbroek and sent to the French king. The best modern translation is that of Michel and Wright in Vol. IV of *Receuilde Voyages et Mémoires de la Société de Geographie* (1839).

RUYSDAEL, *royss'dâl* (or Ruisdaal), Jakob: eminent Dutch landscape painter: about 1625-1682, Mar. 14; b. Haarlem. It has been stated, that for some years he studied and practiced surgery, but was advised by his friend Nicholas Berghem to give his time to painting. The details of his life, however, are little known. The earliest date on a picture signed and dated by him is 1645. In his pictures the trees are excellent in form, the foliage touched with sharpness and precision, and the skies are light and floating. His style of composition is entirely original, and characterized by a certain compactness in the arrangement; the Italian painters have generally groups of trees at the sides, and running out of the picture; in Ruysdael's compositions, they are almost always massed within the picture. Ruysdael and Hobbema hold about an equal position—that of the best landscape-painters of the Dutch school; but Ruysdael was equally eminent for sea-pieces also.—Ruysdael was little appreciated in his lifetime, and died in poverty. His etchings, seven in number, are much prized by collectors. Jan van Kessel and Jan Renier de Vries were his imitators.

RUYTER, *rī'tėr*, D. *roy'tėr*, Michael Adriaanszoon de: Dutch admiral: 1607, Mar. 24—1676, Apr. 29; b. Vlissingen; of poor parents, who sent him to sea as a cabin boy when only 11 years old. He became a warrant officer, and 1635 rose to be a capt. in the Dutch navy. After serving several years in the Indian seas, he was made rear-admiral 1645. He engaged and sank a piratic Algerine squadron off Sallee 1647. In 1652, when

war broke out between the States and England, then under Cromwell's Protectorate, he was placed in command of a squadron, and ordered to convoy a large number of merchant-ships. He was met by the English fleet under Sir G. Ayscough off Plymouth, and an engagement took place. Neither of the fleets gained decisive advantage; but Ruyter saved his convoy. In 1653, in a fight of three days between the English and Dutch fleets off Portland, Ruyter commanded a division under Van Tromp. The English, under Blake, finally obtained a great victory, taking and destroying 11 Dutch men-of-war, and 30 merchantmen. The states-general, 1659, sent Ruyter to assist Denmark against Sweden. He defeated the Swedish fleet, and obtained a title of nobility and a pension from the king of Denmark. In 1864, he fell upon the English factories at Cape Verde, and attempted to seize the island of Barbadoes. As other depredations of the Dutch on English merchants, as well in the E. Indies as on the high seas, were complained of, war was declared against the Dutch; and 1665, June, Ruyter and Van Tromp, with 90 sail, engaged the English fleet under Prince Rupert and the Duke of Albemarle. Both sides fought with such obstinacy that the battle lasted four days, and ended without decisive result. In July, the conflict was renewed, when the English gained a complete victory, destroying more than 20 of Ruyter's men-of-war. In 1667, he destroyed the English shipping at Sheerness, sailed up the Medway as far as Chatham, burned several English men-of-war, and effected more toward conclusion of peace at Breda (1667) than any diplomatist. In 1671, he commanded the Dutch fleet, and fought several battles with the combined English and French fleets, but without decisive results. In 1676, he was sent to the Mediterranean to assist Spain against France, and fought, off the coast of Sicily, a desperate battle with the French fleet, under Admiral Duquesne. Victory was on the side of the French; but Ruyter made good his retreat into the harbor of Syracuse. His legs had been shattered in the engagement, and he died of his wounds. All Europe, even the nations hostile to his own, honored his bravery. A splendid monument was erected to his memory at Amsterdam.

RYACOLITE, n. *rī-ăk'ō-līt* [Gr. *rhuax* or *rhuāka,* a lava-stream—from *rheein,* to flow; *lithos,* a stone]: a mineral of a white or gray color, with a vitreous lustre, resembling glassy felspar.

RYAN, Patrick John, ll.d.: American Roman Catholic prelate: b. Cloneyharp, Ireland, 1831, Feb. 20. He pursued his elementary studies at the Christian Brothers' school in Thurles and began his first classical course at Mr. Naughton's school in the parish of Rathmines. Determined to become a missionary in the United States, he entered Carlow College and after receiving sub-deaconship there, came to the diocese of Saint Louis, Mo.

He was ordained to the priesthood in 1853, made rector of the cathedral and subsequently appointed pastor of the Church of Saint John the Evangelist and vicar-general of the Saint Louis diocese. In 1868 Father Ryan accompanied Archbishop Kenrick to Rome and while there preached a series of Lenten sermons that elicited great praise. On April 14, 1872, he was consecrated Titular Bishop of Tricomia and coadjutor to Archbishop Kenrick and on Jan. 11, 1894, was elevated to the titular archbishopric of Salamis, being transferred the same year to the archiepiscopal see of Philadelphia. In 1883 he was among the United States prelates chosen to visit Rome in the interest of the Catholic Church in America. He gave two annual inaugural addresses at the State University of Missouri, lectured twice before the representatives of the Missouri legislature and delivered discourses in nearly all the large cities of the United States, notable among these lectures being that on Modern Skepticism. He has published *What Catholics Do Not Believe*, and *The Causes of Modern Religious Skepticism*. In 1902 President Roosevelt appointed Archbishop Ryan a member of the Indian Commission and he is a member of the Executive Board of Catholic Indian Missions.

RYBINSK, *rĭ-bĭnsk'*: district town of Great Russia, govt. of Jaroslav, on the right bank of the Volga, 418 m. e.s.e. of St. Petersburg. It is the great centre of the corn trade on the Volga, and, after Nijni-Novgorod, is the chief commercial centre on that river. The trade of Rybinsk is principally in transhipping and forwarding to the capital the goods brought by large vessels up the Volga. For this purpose, more than 6,000 barges are built here every year. The landing-place extends along the river for several miles, and is divided into nine sections, each of which is appropriated to special varieties of goods. The chief articles of trade are corn, flour, tallow, spirits, metals, and timber, and these are forwarded to St. Petersburg by three systems of communications, of which the Marinsky canal conveys goods to the value of $25,000,000; the Tichvin canal, goods to the value of $20,000,000; and the Vyshnivolotsk canal, goods to the value of $10,000,000. There is, besides, the railway.—Pop. 25,200.

RYDAL: a picturesque village in the county of Westmoreland, England, 2 m. n.w. of Ambleside. It is situated in a narrow gorge formed by the projection of two mountains near Rydal lake. The lake, only half a mile in area, contains two beautiful islets, is encircled by meadows and dominated by rocky heights which add to the charm and calm beauty of the surroundings, so celebrated in English literature. Rydal Hall is a fine mansion in a park which contains many grand forest trees and a cascade immortalized in verse by Wordsworth, who lived for some years at Town End, nearby, the residence also for a time of De Quincey.

RYDBERG, *rüd'bĕrg*, ABRAHAM VICTOR: Swedish writer: b. Jönköping, 1828, Dec. 18; d. Stockholm, 1895, Sep. 21. He studied at the University of Lund, and in 1855 entered journalism, contributing to the leading paper of Gothenburg. In 1868 he was sent to an assembly of the church where he was the champion of liberal ideas, and from 1870 to 1872 sat in the Riksdag. In 1882 he became professor of the history of civilization at Stockholm. He is the author of *The Pirate of the Baltic* (1857); *The Last of the Athenians* (1859), which has been translated into English, German, and Danish; *The Doctrine of Christ According to the Bible* (1862); *Magic of the Middle Ages* (1864); *Romish Legends of the Apostles Peter and Paul* (1871); etc. His works include studies in æsthetics, philosophy, and psychology, besides poetry and a translation of Goethe's *Faust,* and he is regarded as one of the foremost Swedish men of letters.

RYDE, *rīd:* flourishing and fashionable Eng. watering-place and market-town; on the n. coast of the Isle of Wight, Hampshire; on the e. and n. slopes of a hill 6 m. s.s.w. of Portsmouth, from which it is separated by the roadstead of Spit Head. It consists of Upper and Lower Ryde; the former anciently called *Rye,* or *La Riche,* and the latter quite modern. The shores are wooded to the verge of the water, and the appearance of the town, with its streets and houses interspersed with trees, is pleasing and picturesque. The pier, nearly a mile in length, forms an excellent promenade. Ryde is the largest town in the island. Pop. 11,000.

RYDER, n. *rī'dĕr:* a clause added to a document; also spelt RIDER. See under RIDE.

RYDER, *rī'dĕr,* JAMES, D.D.: Roman Catholic priest and educator: 1800, Oct. 9—1860, Jan. 12; b. Dublin, Ireland. He early removed to this country, and was educated at Georgetown College, D. C., and at Rome, Italy. At first a teacher in the college of Spoleto, he became prof. of theol. and philos. in Georgetown College on his return; was pastor of churches in Philadelphia, and Frederick, Md.; president of his *alma mater;* superior of the Jesuit Society in the United States 1843-5; president of the College of the Holy Cross 1846, at Worcester, Mass.; again president of Georgetown College 1848-51. He was highly esteemed as a writer and speaker, and published some sermons and addresses. He died in Philadelphia.

RYDQVIST, JOHN ERIK: Swedish author and critic: b. Gothenburg 1800, Oct. 20; d. 1877, Dec. 29. He abandoned trade in 1820 to study law and ancient languages, and in 1827 received a civil appointment in the central administration. He became known by his literary and critical works, joined the staff of the Royal Library at Stockholm, and in 1843 was appointed chief librarian. The same year he succeeded Berzelius as member of the

Swedish Academy. Besides numerous translations of Greek and English works into Swedish, literary and critical essays published in various collections, notably in the *Heimdal,* a critical review that he conducted from 1828 to 1832, his principal works include *The Chief Literary Events of Past Ages* (1828); *The Most Ancient Stage Works of the North* (1836); *The Civil Service in Sweden* (1838); *J. Olof Wallin* (1839), a biographical study; *Travels in Germany, France, and Italy* (1838); and *The Laws of the Swedish Language* (2 vols. 1850-57), a philological work of great value.

RYE: gypsy term for a young man.

RYE, *rī:* village in Rye township, Worcester co., N. Y.; on Long Island Sound and the New York, New Haven and Hartford railroad; 4 m. s.s.w. of Portchester; 24 m. n.e. of New York. In the town of Rye is the large and growing village of Portchester. Rye has a beautiful stretch of beach, several fine churches, a girls' seminary, numerous elegant residences, gas and electric lights, and many attractions for suburban and summer life. Valuable granite quarries are worked in the neighborhood. Permanent population of the town (1910) 3,964.

RYE, *rī:* seaport and municipal borough in the s.e. of the county of Sussex, England, 10 m. n.e. of Hastings. It is charmingly situated on an eminence bounded e. by the Rother, and s. and w. by the Tillingham, which two streams unite here, and, entering the sea 2 m. below, form the old harbor. Overlooking the junction of the streams is a small castle built by William de Ypres, in the reign of Stephen, and now used as a jail. The church is a beautiful and interesting structure—the central tower, transepts, a number of circular arches, etc., all being early Norman. The harbor admits vessels of 200 tons. This ancient town receives historical mention as early as 893. It was walled on two sides by Edward III., and contributed nine ships to the fleet with which that monarch invaded France. Brewing, ship-building, and trade in corn, hops, etc., are carried on. Pop. 4,000.

RYE, n. *rī* [AS. *ryge;* Dut. *rogge;* Dan. *rug;* W. *rhyg,* rye], (*Secăle*): genus of grasses of nat. order *Gramineæ;* allied to Wheat and Barley, and having spikes which generally consist of two-flowered, rarely of three-flowered, spikelets; the florets furnished with terminal awns, only the upper floret stalked. One species (*S. Cereal*) is a well-known grain. It has, when in fruit, a roundish-quadrangular spike, with a tough rachis. Its native country, as in the case of the other most important cereals, is doubtful. It has for ages been cultivated as a cereal plant; though the supposed mention of it, Exodus ix. 32, is doubtful, *spelt* perhaps being intended. It is much cultivated in n. Europe and parts of Asia, and in the United States. Its cultivation does not extend so far n. as that of barley; but it grows in regions too cold for wheat, and on soils too poor and sandy for any

other grain except buckwheat. It thrives best and is most productive in a climate where wheat ripens. It delights in sandy soils but yields large crops in rich loams. Though R. is subject to some variation there are very few clearly defined varieties. The principal division is into winter and spring R., the former sown in autumn, the latter in spring; and the difference has undoubtedly been caused by cultivation. The winter R. succeeds better in most localities than the spring, yielding more grain and longer and better straw. R. is often sown in autumn for green fodder to be used early the following spring. When grown for the grain, the sowing, at the north, should be early in Sep., in land well plowed and finely pulverized. The quantity of seed required varies from about one bushel per acre on poor land to nearly two bushels in rich soils. If drilled in, one bushel is sufficient. For green fodder, three to four bushels per acre should be sown. An average crop of R. contains much less nitrogen, phosphoric acid, and potash than one of wheat, but it requires nearly as much nitrogen, more phosphoric acid, and more than twice as much potash as one of oats. A moderate quantity of phosphatic fertilizer usually gives marked increase in quantity and improvement in quality of crop. R. is cut, with a cradle or reaper, when the straw begins to turn yellow and the grain hardens. The principal disease of R. is Ergot (q.v.). All affected heads should be promptly removed, and if the disease is at all general the whole crop should be mowed and plowed into the ground. R. affected with ergot is a very dangerous food. When possible, seed should be obtained from fields in which the disease has not appeared. Placing the seed in hot brine and then dusting with lime, just before sowing, are preventive measures. In Europe R. is largely used for food. In this country it is less popular than wheat, though considerable quantities are consumed. A good deal is fed to cows and hogs, a small proportion of the crop is exported, and a large quantity is used in the manufacture of whisky. The straw is used for making paper, hats, and numerous other articles. The increase in the quantity of R. produced in this country since 1850 has not nearly kept pace with the increase of population. The average annual quantity now produced is about 33,000,000 bushels. The 4 states producing the largest quantity 1902 were, in the order named, Penn., Neb., and N. Y. In this year the highest average yields were in Mont. and Minn., respectively 25.0 and 22.3 bush. per acre. The lowest yields per acre were 6.3 bushels in Ga., and 7.6 bush. in S. C. The average yield per acre for the country was 17 bush.; average value per bushel 50.8 cents. In most states the legal weight of a bushel of R. is 56 pounds.—PERENNIAL R. (*S. perenne*) differs from Common R. in having a very hard, rod-like culm; ears 3–5 inches long, flatly compressed, with a brittle rachis, and 50–60 closely imbricated spikelets. It endures for many years, but is not valuable for cultivation.

RYE'-GRASS (*Lolium*): genus of grasses, having a two-rowed, flatly-compressed spike, the spikelets appressed edgewise to the rachis. COMMON R., or PERENNIAL R. (*L. perenne*), the *Ray-grass* of the older English authors, probably the first variety of grass brought under cultivation in England, is frequent on waysides, and in meadows and pastures, in Europe and N. America. The spikelets are much longer than their solitary external glume, 6–8-flowered; the florets awnless or nearly so; the culm flattened, 1 to 3 ft. high; the root producing leafy barren shoots, which add to the agricultural value of the grass. The *Common Perennial R.* has been cultivated in France from very early times and in England since 1674. It suffers from drought, and is not as nutritious as some other grasses. *Annual R.* is sometimes cultivated; but is inferior.—ITALIAN R. (*L. Italicum*, or *L.*

1, Common Rye-grass; 2, Italian Rye-grass.

multiflorum, or *L. Bouchianum*), native of s. Europe, was introduced into Britain 1831. In some soils it makes a luxuriant growth early in spring. There are better varieties of grass for hay.

RYE'HOUSE PLOT: in English history, a scheme formed 1683 to waylay and assassinate King Charles II. on his return from Newmarket. This plot was subordinate to a scheme formed at the same time among the leading whigs to raise the nation in arms against Charles II.; and it was planned by a few fiercer spirits of the party, including Col. Rumsey and Lieut.col. Walcot, two military adventurers; Goodenough, undersheriff of London; Ferguson, an Independent minister; and several attorneys, merchants, and tradesmen of London. The deed was to be perpetrated at a farm belonging to Rumboldt, one of the conspirators, called the Ryehouse Farm, whence the name of the plot. The Ryehouse plot is supposed to have been kept concealed from Monmouth, Russell, Shaftesbury, and the rest of those who took the lead in the greater conspiracy. It owed its defeat to the circumstance that the house which the king occupied at Newmarket took fire accidentally, and Charles was thus obliged to leave that place eight days sooner than was expected. Both the greater and lesser conspiracies were discovered before long, and from the connection subsisting between the two, it was difficult altogether to dissever them. The indignation excited by the Ryehouse plot was extended to the whole whig party: Lord Russell, Algernon Sidney, and Lieut.col. Walcot were brought to the block for treason; John Hampden, grandson of his more noted namesake, was fined £40,000; and scarcely one of the plotters escaped.

RYERSON, Adolphus Egerton: Canadian Methodist: b. Charlotteville, 1803, Mar. 24; d. Toronto, 1882, Feb. 19. He entered the Methodist ministry in 1825; and became identified with the Methodist Episcopal Church of Canada at the organization of that body in 1828. In 1832 he went to England to form a connection with the parent body. In 1842 he became first president of Victoria College and in 1845 was appointed superintendent of education for the province of Upper Canada, a position he retained for 30 years. Besides founding and editing *The Christian Guardian*, he wrote *A Manual of Agricultural Chemistry; The Clergy Reserve Question; Compulsory Education.*

RYLAND, Henry: English artist: b. Biggleswade, Bedfordshire. He was trained in art at the South Kensington schools and worked at Paris in the studio of Benjamin Constant, and at Julian's Academy under Boulanger and Lefebre. His practical professional life was begun by him as a designer of stained glass and he contributed to the *English Illustrated Magazine* in its early days. His first work as a painter was exhibited at the Grosvenor Gallery, but he has since exhibited, chiefly watercolors, at the other exhibitions of London, and many of his pictures have been engraved.

RYLE, John Charles: English Anglican bishop: b. Macclesfield, Cheshire, 1816, May 10; d. Lowestoft,

Suffolk, 1900, June 10. He was educated at Oxford, took orders in the English church, and was successively curate at Exbury, rector of St. Thomas', Winchester (1843), of Helmingham, Suffolk (1844), and vicar of Stradbroke, Suffolk (1861). He was appointed honorary canon of Norwich, in 1872, and in 1880 was nominated Dean of Salisbury, but before he had taken possession of this post was made bishop of the newly formed see of Liverpool. He was one of the most prominent members of the Evangelical party, and besides publishing numberless tracts which were widely popular, was author of such books as *Coming Events and Present Duties* (1867); *Bishops and Clergy of Other Days* (1868); *The Christian Leaders of the Last Century* (1869); *Expository Thoughts on the Gospels* (1856-69).

RYMER, *rī'mėr*, THOMAS: English critic and antiquary: b. Yafforth, Yorkshire, 1641; d. London, 1713, Dec. 14. He studied at Cambridge, subsequently kept terms at Gray's Inn, and was called to the bar in 1673. In 1678 he published *Edgar, a Tragedy.* In 1692 he succeeded Shadwell as historiographer royal, and was entrusted with the preparation of a collection of public treaties, which he began to publish in 1704, under the title of *Fœdera, Conventiones, et cujuscunque Generis Acta publica, inter Reges Angliæ et alios Principes.*

RYOT, n. *rī'ŏt* [Arab, *raiyat*, a peasant—same word as RAYAH, which see; literally, the governed]: in *Hindustan*, a farmer, peasant, or cultivator of the soil. RYO'TWAR, mode of revenue settlement, or of assessment by govt. officials in India, with each actual cultivator of the soil—at a stipulated money-rent, usually for a year.

RYSBRACH, *rīs'brâch*, MICHAEL: sculptor: 1693-1770, Jan. 8; b. Antwerp. He settled in London 1720, and executed numerous works there; among which were the monuments to Sir Isaac Newton in Westminster Abbey, and to the Duke of Marlborough at Blenheim, a bronze equestrian statue of William III. for the city of Bristol, and a colossal statue of George II. for the parade at Greenwich Hospital.

RYSWICK, *rīs'wĭk* or *rīz'wĭk*, PEACE OF: treaty concluded 1697 at Ryswick, Dutch village between Delft and the Hague; signed by France, England, and Spain Sep. 20, and by Germany Oct. 30. It put an end to the sanguinary contest in which England had been engaged with France. It has been often said that the only equivalent then received by England for all the treasure that she had transmitted to the continent, and all the British blood which had been shed there, was an acknowledgment of William's title by the king of France; but the benefit to the allied nations by the check given to the gigantic power and overweening ambition of France must not be overlooked.

S

S, s: 19th letter of the English and other western alphabets (18th in the Latin), a consonant: it belongs to the dental series, and marks the fundamental sound of the hissing or sibilant group, *s*, *z*, *sh*, *zh*. The Sanskrit has characters for three hissing or *s*-sounds; the Semitic languages had four (see ALPHABET). The Hebrew or Phœnician character, from which the modern *s* is derived, was called *shin*—i.e., tooth, and in its original form probably represented two or three teeth. The same character, with the presence or absence of a diacritic point, marked either *s* or *sh*. In Eng., *s* is used both for the sharp and flat sounds, as *this*, *those* = *thoze*. The nearness of the *s*-sound to *th* is seen in the Eng. *loves* = *loveth*, and in the phenomenon of lisping—*yeth* = *yes*. This seems to furnish the transition to the so frequent interchange of the High-Ger. *s* for the Low-Ger. *t*, as in Ger. *wasser* = *water*; Ger. *fuss* = *foot*. Comp. Gr. *thalassa* = *thalatta*. For the substitution of *r* for *s*, see R. In such cases as *melt*, compared with *smelt*; *pike*, with *spike*; *lick*, with *sleek*; Ger. *niesen*, with Eng. *sneeze*; Eng. *snow*, Goth. *snaivs*, with Lat. *nix* (gen. *niv*-is); Gr. *mikros*, with *smikros*; *short*, AS. *sceort*, with *curt*—it is difficult to say whether the form with, or that without the *s* is the older. Grimm considers *s* as the remnant of an old prefixed particle (*as*, *is*, *us*), having, perhaps, the force of *ex* in Lat. *exopto*, I wish greatly; or *ur* in Ger. *urklein*, very small. An initial *s* before a vowel in Lat. corresponds to Gr. *h*; comp. Lat. *sub*, *sex*, *sal* (salt), with Gr. *hypo*, *hex*, *hals*. In Greek and Latin, *s* was pronounced feebly at the end of words, and still more so between two vowels. It thus frequently disappeared in these positions, and this was one of the chief sources of the irregularities in the declensions and conjugations, which had originally been formed on a uniform system (see INFLECTION). The dropping of *s* is one of the ways in which the forms of modern French words have become so degraded; compare Lat. *magister*, old Fr. *maistre*, modern Fr. *maître*; *presbyter*, *prestre*, *prêtre*. Even where still written, final *s* in French is mostly silent—e.g., *vos*, *les*.

SAAD-ED-DIN, *sâ'ad-ĕd-dēn'*: Turkish historian: 1536–99; died at Constantinople. His history, *Taj-al-Tuarikh* (the Crown of Histories), a work held in high estimation by scholars, gives a general account of the Ottoman empire from its commencement in 1299 till 1520: it has never been printed, but MS. copies of it are found

in most of the great libraries of Europe, and an inaccurate translation into Italian was pub. 1646–52. S. wrote also the *Selim-Nameh*, or History of Selim I., chiefly a collection of anecdotes regarding that prince.

SA'ADI, Mus'lih-Uddin': see Sadi (Persian poet).

SAALE, *sâ'lĕh:* river of Germany, distinguished from other and smaller rivers of the same name by the title Saxon or Thuringian S.; rising on the w. slope of the Fichtelgebirge (Bavaria), and flowing n. through several minor states, and finally across the Prussian province of Saxony. It empties into the Elbe, about 25 m. above Magdeburg, after a course of 200 m.

SAARBRUCKEN, *sâr'brük-kĕn:* town of Rhenish Prussia, on the Saar, 40 m. s.s.e. of Treves. It is the seat of an active industry, including coal-mining, spinning, the manufacture of cotton fabrics, of iron goods, pottery, and tobacco. Here the German and French armies first met in the war of 1870–1. Pop. with St. Johann, on the other side of the Saar, 23,250.

SAAR'DAM: see Zaandam.

SAARLOUIS, *sâr-lô'is,* F. *sâr-lô-ē':* town of Rhenish Prussia, 31 m. s.s.e. from Treves, and between four and five m. from the frontier of France; on the left bank of the Saar, branch of the Moselle. It is a place of some strength, being walled, and containing several forts, and has considerable importance as a border fortress. There are manufactures of firearms in the town, and lead and iron mines in the neighborhood. There are also wireworks. S. was long in the possession of France, and was fortified by Vauban in the reign of Louis XIV. The congress of Vienna gave it to Prussia 1815. Pop. 8,000.

SAATZ, *sâts* (Bohemian, *Zatec*): town of Bohemia, on the Eger, 45 m. w.n.w. of Prague. Hops and grain are largely cultivated in the vicinity. Pop. 10,425.

SABADELL, *sâ-vâ-thĕl':* rising manufacturing town of Spain, in Catalonia, 14 m. by railway n.w. of Barcelona. It has risen into importance only within recent years, and it is now the chief seat of manufacture in Catalonia. Woolen and cotton fabrics are made in most of the 100 factories. Pop. 23,400.

SABADILLA, *săb-a-dĭl'a,* or Cebadilla, *sĕb-,* or Cevadilla, *sĕv-* (*Asagræa officinalis,* formerly *Helonias officinalis*): Mexican plant whose seeds are employed in medicine, because of properties analogous to those of White Hellebore (*Veratrum album*). The plant has a bulbous root, and grows in tufts: the leaves are linear and grassy, about 4 ft. long, a quarter of an inch broad: among them rises a round *scape* (leafless flower-stem), about 6 ft. high, bearing a very dense raceme, 18 inches long, of small white flowers. The seed-vessels are papery *follicles,* three to-

gether; the seeds one, two, or three in each follicle, two or three lines long, winged and wrinkled. The powdered seeds have been known in medicine since the 16th century. They consist of fatty matter, two special organic acids, to which the names *Cevadic* and *Veratric* acids have been given; of varieties of resin, yellow coloring matter, gum, and a highly poisonous alkaloid named *Veratria* in combination with gallic acid; and in addition a French chemist, Couerbe, has discovered a crystalline body named *Sabadilline*. Notwithstanding its highly poisonous properties, sabadilla is prescribed in parts of Europe as a vermifuge in cases of tape-worm and ascarides. In the form of powder, it is sometimes applied to the head to destroy lice, but if the skin be broken, some other remedy should be selected, as absorption to a dangerous extent might ensue. From its stimulating properties, it is applied externally in the form of tincture (which, however, is not an officinal preparation) for chronic rheumatism and paralysis, and nervous palpitation.

SABADILLINE, n. *săb-a-dĭl'lēn:* in *chem.*, $C_{20}H_{26}N_2O_5$. An organic base obtained by exhausting sabadilla seeds with alcohol of sp. gr. 0.845. It crystallizes in stellate groups of cubic crystals which melt at 200°, but decompose at a higher temperature; is slightly soluble in hot water, very soluble in alcohol, insoluble in ether. Strong mineral acids decompose it, but it forms salts with dilute sulphuric and nitric acids.

SABÆ'ANS: Arabian nation, dwellers in Yemen; whose chief city was ancient Saba; supposed descendants of one, two, or three Shebas. See SABEANS.

SABÆ'ANS: ancient sect of star-worshippers in Persia and Chaldea. See SABIAN.

SABÆ'ANS, or SABE'ANS, or SA'BIANS: oriental sect. See CHRISTIANS OF ST. JOHN; also ZABISM.

SA'BAL, or CABBAGE PALMETTO: the most northern arborescent palm in the world. It is a tree attaining 80 ft. in height. Until it is from 10 to 20 ft. high, its straight, robust stem is surrounded by the dry fibrous sheaths, and the stubs of petioles, of leaves, projecting like spines, and giving a very picturesque and characteristic appearance. The leaves, massed at the top of the trunk are cordate, or fan-shaped, narrowly pinnatifid, each division cleft at its apex and recurved at the summit. The terminal bud, by which growth is continued, or cabbage, is a favorite delicacy with the negroes, who cut it out of the young and healthy trees,—thereby causing the ultimate death of the palmetto—and cook it as a vegetable. Many palmettoes are killed by the removal of the tops of the young trees. These tops are sent to factories, where they are trimmed down to a disk some 8 in. thick, the soft central parts are cut out, and the disk is then boiled to loosen the fibres of the sheaths and petioles, which are made into scrubbing brushes. These buds for brushes are worth only about 6 or 7

cents apiece, and yet the trees are being exterminated for so slight returns. The mature leaves are used for thatching, and the trunks resist teredos to such an extent that they are valuable for sub-marine pilings.

This palmetto has always been interwoven with the history of South Carolina, the Palmetto State. A fortification, or stockade, on Sullivan's Island in Charleston Harbor, 1776, was composed of earth and palmetto logs, and succeeded in repulsing the attacking British fleet under Sir Peter Parker, whose shot had practically no effect on the wall, for they could not split the spongy trunks, but were imbedded in them. Therefore, in memory of this event, the palmetto tree appeared on the seal of South Carolina, over an uprooted branchless oak-tree representing the oaken ships of England; on a flag adopted after the Ordinance of Secession (1861) was passed; and also on a medal. At the signing of the secession ordinance, palmetto trees flanked the platform, and at the back was the banner of the convention, bearing among other curious devices, a most unnatural palmetto, with a gigantic rattlesnake wound about its trunk. Cockades, rosettes of blue ribbon with a palmetto imprinted on a button in the centre, were worn by Charlestonians in 1860-1.

SAB'ALO: a name of the tarpon, further known as savalle, savanilla, grande ecaille, silver-king, etc.; also of the Hawaiian milk-fish (*Chanos chanos*).

SABAISM, n. *sā'ba-ĭzm*, or SABÆISM, *să-bē'ĭzm*, or SABISM, *sā'bĭzm*. See SABIAN; also ZABISM.

SABAOTH, n. *săb'ā-ŏth* [Heb. *sebaoth*, the plu. of *saba*, an army or host]: armies; hosts; used only in the scripture phrase of 'Lord of Sabaoth,' meaning Jehovah of Hosts.

SABATIER, *sâ-bâ-tē-ā*, PAUL: French theologian and historian: b. Saint-Michel-de-Chabrellanoux, Ardèche, 1858, Aug. 3. He was educated in the theological faculty of Paris, and in 1885 became vicar of the French parish of Saint Nicolas at Strasburg. The German government offered him a superior appointment, involving his becoming a German citizen; he requested to be allowed to retain his post as vicar, but the request was viewed as a political manifestation, and he was banished the country. For a brief time he was pastor of Saint Cierge la Serre; then he withdrew from the ministry to devote himself wholly to historical studies. His chief work is *La Vie de Saint François d'Assise* (1893), based largely on previously unutilized documents discovered by him in various Italian archives. Within a year from the appearance of the first French edition, editions had appeared in almost all Continental languages, including Swedish and Polish. The Russian version was prepared under the direction of Tolstoi. Sabatier published also *La Didaché ou l'Enseignement des Douze Apôtres* (1885), and edited of the *Speculum Perfec-*

tionis by Leo of Assisi (1898; translated into English by S. Evans as *St. Francis of Assisi, the Mirror of Perfection* (1898), and of the *Tractatus de Indulgentia*) (1900), of Franciscus Bartholus.

SABAZIUS, *sa-bā'zhĭ-ŭs:* a Phrygian divinity, identified by the Greeks in part with Zeus and in part with Dionysus. His symbol was a serpent. His worship extended to Greece, and was found also in Italy, especially in late pagan times. He was said to have been the first to employ oxen for plowing.

SABBATA'RIAN CONTROVERSY: the dispute in various forms between those who urge and those who oppose a rigid observance of Sunday. It has been going on from the time of King James I., of England, who favored Sunday sports, and thereby offended many of his subjects, and it has in late years included proposals to throw open to the public museums, libraries, and galleries, and other places of recreation and instruction, on the first day of the week. Most of these changes have been generally adopted. The proposition to permit the sale of alcoholic liquors in saloons on Sunday is at present the chief feature of the Sabbatarian Controversy.

SABBATA'RIANS: a term applied to those who urge rigid observance of Sunday. It was applied also in earlier times to the sect now known as Seventh Day Baptists, who observe Saturday for Sunday, and who, for that reason, are permitted in Rhode Island, where they are comparatively numerous, to work on Sunday.

SABBATH, n. *săb'bath* [Heb. *Shabbath,* the Sabbath —from *shabath,* to rest from labor: Gr. *Sabbăton*]: day or time of rest; day of cessation from all ordinary labor or employment; among the *anc.* and *modern Jews,* the seventh day of the week, commencing from sunset on Friday and ending at sunset on Saturday; among *Christians,* the first day of the week, commencing at 12 midnight on Saturday and ending at 12 midnight on Sunday; commonly called Sunday, properly *the Lord's Day* (q.v.—see also SABBATH, below). Among the *Jews,* the name Sabbath was applied also to the Sabbatical Year (q.v.). SAB'BATHLESS, a. *-lĕs,* without repose from labor. SABBATH-BREAKER, one who profanes the Sabbath. SABBATH-BREAKING, the breaking or profaning of the Sabbath. SABBATARIAN, a. *săb'ba-tā'rĭ-an,* pertaining to the Sabbath: N. a rigid observer of the Sabbath; one who keeps the Sabbath on the seventh day. SAB'BATA'RIANISM, n. *-rĭ-an-ĭzm,* the tenets of the Sabbatarians. SABBATIC, a. *săb-băt'ĭk,* or SABBATICAL, a. *-ĭ-kal,* pertaining to or resembling the Sabbath; enjoying or bringing rest. SABBATH-DAY'S JOURNEY, distance of nearly a mile, calculated from the walls of the city where they dwelt, which the Jews were allowed to travel on the Sabbath. SABBATICAL YEAR, every seventh year (see below). SAB'BATISM, n. *-ĭzm,* rest.

SABBATH.

SABBATH: the ancient Hebrews' weekly day of rest. In Hebrew the word means week, and the expression of Josephus (Apion ii. 2), who explains it as meaning 'a rest from all labor,' is rather to be looked upon as a commentary than as a derivation etymologically correct.

The Sabbath was the seventh day of the Hebrew week and lasted from sunset on Friday to sunset on Saturday. It was celebrated as a holy day; a day of rest and rejoicing; by ceasing from all labor, and by causing servants, strangers, and cattle to cease also. Plants even were to rest; they were neither to be sown nor reaped on that day. The services of priests and Levites in and about the tabernacle and temple were, however, to be performed through the Sabbath day. Circumcision, too, could take place on the Sabbath, when it fell on the eighth day after the birth of a male child.

Profanation of the Sabbath was punished by stoning to death. It was not until after the exile that the character of the work by which the Sabbath could be profaned was strictly defined. In the law only one act of labor was specifically prohibited, that of lighting a fire for the purpose of cooking. According to Josephus armies never proceeded on their march on the Sabbath. The Pharisees forbade even the plucking of grains of corn on that day; the healing of a sick man; or the walking of a cured patient bearing his bed. According to the Mishna even a broken bone was not to be set, nor dislocations poulticed or bound up on that day.

Origin of the Sabbath.—The Sabbath appears to have been an institution of religion long prior to Moses. It is sometimes said that it was borrowed by him from older nations, such as the Egyptians. Such Latin writers as Seneca and Ovid give intimations that the veneration for the seventh day had found some favor among the early Romans. It seems more natural to suppose that it had come down with the old traditions of theocratic religion which are found embalmed in the first chapter of Genesis. The poem of the creation, in which God is related to have created the world in six days and rested on the seventh day, embodies a tradition much earlier than the period of Mosaic legislation. There are several intimations in the patriarchal age that the followers of Jehovah, such as Abraham and Isaac, chose certain times for rest, meditation, prayer, and sacrifice to God. In after times it would almost seem as if the poem or hymn of the creation was used as a special part of Sabbath-day devotions. On that day the people were called to reflect upon the fact that the whole universe, including themselves, had an origin in one personal and supreme Being; and that He had exerted His Omnipotence for a definite period and then had ceased from His work. They were constantly to remind themselves of the work of God, once for all completed, by their own six days' round of labor; and as God had rested from His work so were they to rest from theirs and to

turn their thoughts toward Jehovah 'who had done so great things for them.'

Mosaic Ordinances of the Sabbath.—The scope and meaning of the Sabbath-day was very much extended and amplified by the provisions of the law as contained in the Hexateuch. It was made to be a day on which not only the finished task of creation was to be commemorated, but on which the great providential deliverances of the children of Israel were likewise to be recalled. But first of all the command is given by the law in various forms of speech, but with the same intent throughout the books of the law, Exodus, Deuteronomy, and Leviticus, to remember the seventh day, the Sabbath, to keep it holy; most specifically in Lev. xxiii. 3: 'Six days shall work be done: but the seventh day is the sabbath of rest, an holy convocation; ye shall do no work therein: it is the sabbath of the Lord in all your dwellings.'

First of all there are three specifications as to the manner in which the week is to be spent: (1) by labor —'Six days shalt thou labor, and do all thy work:' (Ex. xx. 9); (2) by rest on the seventh day; on this day the people are ordered to rest, literally to take breath, then are enumerated in detail those who are enjoined from work: 'Thou, nor thy son, nor thy daughter, thy manservant, nor thy maidservant, nor thy cattle, nor the stranger that is within thy gates.' The penalty of death is threatened against all who shall disobey this command. The reasons of the command are given thus: (1) as a counsel of mercy—'Six days thou shalt do thy work, and on the seventh day thou shalt rest, that thine ox and thine ass may rest, and the son of thine handmaid, and the stranger, may be refreshed' (Ex. xxiii. 12); (2) as a commemoration of the deliverance from Egypt—'And remember thou wast a servant in the land of Egypt, and that the Lord thy God brought thee out thence through a mighty hand and by a stretched out arm, therefore the Lord thy God commanded thee to keep the sabbath day' (Deut. v. 15); (3) as a commemoration of the finished creation, 'For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day: wherefore the Lord blessed the sabbath day, and hallowed it' (Ex. xx. 11); (4) as a sign of the covenant, just as circumcision was the sign of the Abrahamic covenant, and the rainbow the sign of the covenant with Noah—'Speak thou also unto the children of Israel saying, Verily my sabbaths ye shall keep, for it is a sign between me and you throughout your generations, that ye may know that I am the Lord that doth sanctify you . . . It is a sign between me and the children of Israel forever: for in six days the Lord made heaven and earth, and on the seventh day he rested, and was refreshed' (Ex. xxxi. 13, 17).

The Jews of today who profess to keep up the tradition of their fathers still observe the Sabbath as a joyful

festival. It is held from Friday evening to Saturday. Among some of them it is considered an act of spirituality to begin the celebration half an hour before Friday's sunset and to continue it half an hour after sunset on Saturday for the benefit of the souls of those who are in torment, for they believe that the damned are allowed a mitigation of their suffering during the feast. On Friday afternoon all the food for the following day is prepared, and their festal array is laid out for the Sabbath. Some Jews have special raiment which they wear only on that day; on the morning of which the Sabbath lamp is lit and the Sabbath bread laid on the table. The master of the house at the close of the evening meal blesses the wine and passes it round. They eat three meals on the Sabbath-day and they have a maxim that it is good to honor the day in the body, in dress, in eating, and in drinking.

The Lord's Day.—A careful consideration of early Church history and early Church writers leads to the conclusion that the day of Christ's resurrection, the first day of the week, grew up, coeval with the existence of Christianity itself, as the one distinctively Christian festival, which was made to fall in with the injunction to periodical rest, founded on the earliest traditions of biblical religion and provided for under Moses by special legislation for the observance of the Sabbath. Nevertheless the idea of the Lord's Day is wholly distinct from that of the Sabbath, which seems to have been likewise observed by the early Church, although sometimes as a fast. The Saturday half-holiday, which still survives in some countries or at some seasons of the year, is certainly derived from this double observance. The tendency to sabbatize the Lord's Day was perhaps due to certain decrees of the Christian emperors beginning with Constantine, who closed the law courts, etc., on what Justin Martyr calls 'the day of the sun,' and what Constantine speaks of as 'venerable Sunday.'

Civil legislation on behalf of the observance of Sunday began in the Roman empire in an early part of the 4th century, as in the statute of Constantine (321), which runs as follows: 'On the venerable day of the sun let all magistrates and people residing in the city rest, and let all workshops be closed. In the country persons engaged in agriculture may, however, according to their will and without violating this law, continue their toil, for often another day is not so suitable either for sowing grain or for planting vines; and if the proper opportunity for such operations be lost the bounty of heaven may be disappointed.' While Constantine permitted the legal freeing of slaves and the visitation of captives on Sunday, he prohibited the prosecution of lawsuits. Theodosius (386) published a decree suspending the theatrical shows and circus races on Sunday. These historical facts are important as bearing on the present Sunday laws in England and America.

The Frank emperors kept up the observance of the Lord's Day by their capitularies or general statutes; and even during the French Revolution, when the Christian calendar was abolished, each tenth day was made a day of rest, and public offices, schools, workshops, and shops of merchandise, excepting those of food and medicine, were ordered to be closed. The Code Napoléon ordered the observance of Sunday.

In England the observance of the Lord's Day has been enjoined by statute from the earliest times. Canute (1028-35) prohibited marketing, hunting, and the holding of local courts on that day. After the Conquest the conduct of the people with regard to trade, sports, and the law courts was controlled by special statutes.

The most important legislation on the subject of Sunday usage is that which was promulgated in the reign of Charles II. (1676). By the law then passed a prohibition is imposed upon all worldly labor or business excepting works of necessity or charity, necessary traveling, the service of any legal writ excepting in case of high treason or treason-felony, or breaches of the peace; and the sale of food in inns and eating-shops.

The American colonists, especially in their early New England settlements, enforced the observance of the first day of the week by the most rigorous penalties. People were compelled by the laws of Massachusetts, Connecticut, Georgia, South Carolina and Virginia to attend public worship in a church or conventicle. It was only as time advanced that a distinction was made between the observance of Sunday as a civil and as a religious institution. (See SUNDAY.) Consult: Hessey, *Bampton Lectures* (1860); Oehler, *Theology of the Old Testament;* Proudhon, *La Célébration du Dimanche;* Briggs, *The Higher Criticism of the Hexateuch* (1893); Abrahams, *Jewish Life in the Middle Ages* (ib. 1896); Cox, *Literature of the Sabbath Question* (2 vols. Edin. 1865); Sir W. Domville, *Examination of the Six Texts commonly Adduced from the New Testament in proof of a Christian Sabbath* (London, 1849); *Inquiry into the Supposed Obligation of the Sabbaths of the Old Testament* (London, 1855); Fairbain, *Typology of Scripture* (ed. Edin. 1857); J. Gilfillan, *Sabbath Viewed in the Light of Reason, Revelation, and History, etc.* (Edin. 1861); Holden, *Christian Sabbath* (London, 1825); Jastrow, *Original Character of the Hebrew Sabbath* in the *American Journal of Theology* (New York, 1898); Jordan, *Scriptural Views of the Sabbath of God* (London, 1848); Montefiore, *Religion of the Ancient Hebrews* (Hibbert Lectures, London, 1893); Pirret, *Ethics of the Sabbath* (Edin. 1855); Baden Powell, *Christianity without Judaism* (London, 1857); Smend, *Alttestamentliche Religionsgeschichte* (Freiburg, 1893); Wellhausen, *Prolegomena zur Geschichte Israels* (4th ed. Berlin, 1895; Eng. trans. Edinburgh, 1885).

SABBATHAI ZEWI, *sāb-bā-tā'ē zā'vē:* one of the most remarkable 'Messiahs' of modern times, founder of a widespread sect of semi-Christians and semi-Jews throughout Europe, Asia, and Africa; b. of Jewish parentage, at Smyrna 1641; said to have died 1677. A boy of extraordinary gifts, he had at the age of 15 mastered the Talmud, and at 18 was an adept in the mysteries of the Cabbala. Soon incited by fantastic dreams and foolish friends, he declared himself the Messiah, sent to shake off the thraldom both of Christianity and of Mohammedanism from the Jews, and to convert all humanity. The supreme rabbinical council thereupon excommunicated him, and afterward declared him an outlaw. Expelled from Smyrna by the municipal authorities, he went to Saloniki 1659, and two years later to Palestine, and then to Alexandria, accompanied by several thousand disciples—many being persons of wealth and station. He had great personal beauty and a fiery eloquence; and at Alexandria his power and influence grew so rapidly, that the revenues of the kingdom to be founded by the new Messiah, and the means of supporting the wars that he was to wage, were seriously considered.

In 1664, no fewer than about 80,000 people belonged to the new empire; and in the following year, the beginning of the Messianic reign within a few months, and the rebuilding of the Temple in the next year, were proclaimed aloud in the streets of Alexandria by S. and six disciples, all clad in white raiment, with garlands on their heads. Returning to Jerusalem, he proclaimed the resurrection, to take place within six years, and the deposition of the sultan, whose crown would be placed on S.'s head. The Jews of Asia, Africa, and Europe, became divided into two camps: those who believed, sold their property to get ready-money for their journey to, and final abode in, the new capitol, Jerusalem; but others, and some of the highest spiritual authorities, declared all the pretended Messiah's miracles cabbalistic tricks, and himself an impostor. Returning to his native place, Smyrna, he was received with royal honors. Meanwhile, the attention of the Turkish govt. was drawn to this movement, and S.'s arrest, imprisonment, and examination were ordered; but the janizaries returned without him, not having dared 'to stretch forth their hand against the sacred man.' He now offered to surrender voluntarily, and was committed as a prisoner of state. When, at last, he was brought before the sultan, his courage failed, and he declared himself nothing more than a simple rabbi: it was only his disciples, he averred, who had called him a Messiah. The sultan then proposed to test his 'mission,' by three poisoned arrows to be shot at him; if these proved harmless, the sultan would at once become his follower. In speechless terror, S., at the instigation of his Jewish interpreter, now took the turban from the head of some official, and placed it upon his own, thereby indicating, as the interpreter declared, that his sole object all ong had been to embrace Islam, and to carry over all the ews with him. The sultan declared himself satisfied, and

honored him with the title of an effendi, giving him an honorary post.

But this extraordinary movement was far from having reached its end. The most wonderful stories were circulated among the believers. A fictitious man was supposed by some to have embraced Islam, while the real Messiah had ascended heavenward. Others believed that Islam was to form part of the new religion; and S., countenancing this view, converted many Jews to Mohammedanism. Nathan, one of his most enthusiastic disciples, travelled about, and caused strife without end, even sanguinary revolts. Many, however, had turned from him by this time, and the voices of the rabbis began to be listened to. Finally, the grand vizier was persuaded to imprison S. once more, and to send him to Bosnia, where he died in a prison in Belgrade—according to some by poison, while according to others he was put to death ten years after his conversion to Mohammedanism. His case is most remarkable: he was not accused of immorality; and none denied his extraordinarily brilliant powers of mind, or his erudition. Probably, he was a self-deceiver whose transient strength and final weakness were in his egotistic dreams. His death, however, brought a reinforcement of his sect, which even many of his former antagonists now joined; and its tenets then became developed into a proper religious system—that of the Sabbathaites or Sabbathians (Shebsen), the chief apostles being Nehemiah, previously an enemy of S.; and Nehemiah Hajun, who taught the dogma of the Trinity as part of the new faith. It became a principle of this religion to accept and to modify itself to the dominant creed of the country—Islam in the East, Christianity in the West. Remnants of it still exist in Poland and Turkey. See Jewish Sects.

SABBATIA, *săb-bā'tĭ-a:* genus of plants of nat. order *Gentianaceæ,* natives of N. America, the general name American Centaury. The corolla is 5–12 parted, wheel-shaped; leaves entire, sessile, opposite or whorled; flowers white or pink, mostly handsome. They are small herbaceous plants, some with simple, and some with branched stems, and nearly all the species occur on low sandy or wet grounds on the coast. They all contain, like many others of the same order, a pure bitter principle, on account of which they are useful in intermittent fevers and as a tonic.

SABBATICAL YEAR (Heb. *Shenath, Shabbathon, Shebiith, Shemittah;* Gr. *Hebdomatikos* or *Sabbatikos eniantos*): every 7th year, set aside in the law of Israel as a sabbath or rest for the land and people. There are in the Pentateuch four special injunctions as to its celebration. The first (Exod. xxiii. 10, *seqq.*) ordains that the land after six years' culture should be left to itself in the seventh, so that the poor, and the beasts of the field should eat its spontaneous growth. The second (Lev. xxv. 2–7) views the hallowed period as a 'Sabbath of rest unto the land'—as a solemnity in honor of Jehovah, and enjoins, further, that the growth of the seventh year be for proprietor, servants, and strangers, i.e., common property. In the third

passage (Deut. xv. 1–11), the creditor is enjoined to release the debts owing to him by his poor brother and neighbor. It was and is disputed whether this 'release' means the entire giving up of the debt, or a mere respite. The Mishna decided for the former; but the effects of this view were so injurious that they were counteracted by an act called the *Prosbul*, passed by Hillel the Great. The fourth passage (Deut. xxxi. 10–13) contains the command to read, in the solemnity of the year of release in the 'Feast of Tabernacles,' the Law before all the people in holy convocation, men, women, children, and strangers. The fundamental idea of the S. Y. is identical with that of the weekly Sabbath; see also JUBILEE, the highest exaltation of the idea of sabbatical rest. Its practical working (see I Macc vi. 49, 53; Jos. *Ant.* xiv. 16, 2, etc.), seems to have been fraught with difficulties; and it is thought not to have been kept before the Exile. Like the Jubilee, it was to be proclaimed on the 10th day of the seventh month, at the end of harvest. Doubts have been expressed as to the Jubilee (q.v.) ever having been kept in reality; yet there is no reason for the least doubt about the rigor with which the S. Y. was observed, after the Exile, till a very late period. Alexander, Cæsar, and the late emperors exempted the Jews from tribute during it. The S. Y. being one of the 'ordinances attached to the land'—i.e., Palestine only—it ceased with the final overthrow of the Jewish commonwealth.

SABBATON, n. *săb'a-tŏn* [OF. *sabatine*—from *sabot*]: in *old arm.*, a round-toed, armed covering for the foot, worn during a part of the 16th century.

SABBIONETTA, *sâb-bē-ō-nĕt'tâ*, or SABBIONETA, *sâb-bē-ō-nā'tâ:* city of n. Italy, province of Cremona; in a marshy district, abundant in pasturage. It was cap. of a principality given by Napoleon I. to his sister Pauline 1806, and was a place of consequence; now it is decayed, the pop. (less than 2,000) decreasing.

SABBIRE, n. *săb'bīr* [etym. doubt.]: a piece of timber; a beam.

SABEANS, or SABÆANS, *sā-bē'anz:* Arabian nation, dwellers in Yemen, whose chief city was anc. Saba; supposed descendants of one, two, or three Shebas mentioned in the Bible. Historically, the S. appear chiefly as the inhabitants of Arabia Felix, or Yemen (n. of the present Yemen), whose principal city was Saba, and whose queen is said to have visited Solomon, attracted by the fame of his wisdom. Josephus, however (*Ant.* viii. 6, 5), makes her the queen of Ethiopia (Meröe), and the modern Abyssinians claim her as their own. Her name, according to their tradition, was Makeda; and her visit to Jerusalem made her not only a proselyte to the religion of Solomon, but she became one of his wives, and had by him a son, Menilek, who afterward ruled Ethiopia (q.v.). The Arabs, on the other hand, called her Balkis, the earliest name that occurs of a Himyaritic queen; but no historical value attaches to this tradition more than to the innumerable

legends that have clustered round her name in connection with the great king.

Numerous passages in Greek and Roman writers, as well as in the Bible, testify to the vast importance of these dwellers in Yemen as a wealthy, widely-extended, and enterprising people, of fine stature and noble bearing. Their chief greatness lay in their traffic, which was principally in gold and gems, spice, incense, and perfumes. The S. held the key to India, and were the intermediate factors between Egypt and Syria, which again spread the imported Indian wares over Europe; and even when Ptolemy Philadelphus, B.C. 274, had established an Indian emporium in Egypt, the S. still remained monopolists of the Indian trade, the only navigators who braved the perilous voyage. As in many other respects, they resembled the Phœnicians in this also, that, instead of informing other people of their sources and the tracks of their ships, they spread preposterous tales about the countries that they visited, and claimed as the product of their own country much of what they sold. Being merchants of those things which the luxury of late classical times considered absolute necessities, they could not fail to gather enormous riches; e.g., in the 3d c. of the Roman empire, every pound of silk—a material used in enormous quantities—that came from Arabia was paid by a pound of silver, at times even of gold. As a consequence, the S. became luxurious, effeminate, and idle. The pictures of them drawn by the classic writers are doubtless exaggerated. The meanest utensils in the houses of these merchant princes were—if we were to credit those writers—wrought in the most cunning fashion, and of gold and silver; their vases were incrusted with gems, their firewood was cinnamon. Their colonies must have extended over immense tracts of Asia—the Ethiopian S. probably being one of the first foreign settlements; yet nothing beyond conjectures can be given about them. Regarding their government, Dio Cassius informs us that they had a king, who never was allowed to leave his palace. Respecting their religion, see ZABISM. Their language is supposed to have been a Semitic (Arabic) dialect, almost entirely lost to us now. Some tablets with Himyaritic inscriptions have been found, but their readings are not satisfactorily fixed. See SEMITIC LANGUAGES: ARABIA: SANAA.

SABE'ANS, or SA'BIANS, or SABÆ'ANS (oriental sect): see CHRISTIANS OF ST. JOHN.

SABELLIAN, n. *sa-bĕl'lĭ-an:* follower of *Sabellius* (q.v.). philosopher in the 3d c., who taught that there is only one person in the Godhead · ADJ. pertaining to Sabellius and his doctrines. SABEL'LIANISM, n. *-ĭzm,* the tenets of Sabellius.

SABELLIUS, *sa-bĕl'lĭ-ŭs:* celebrated African anti-Trinitarian of the 3d c.; b. probably at Ptolemais in the Pentapolis, where certainly first his opinions were promulgated. Nothing is known regarding his life—the few statements current being contradictory and untrustworthy; but it is generally thought that he did not broach his peculiar tenet till shortly before his death—the date of

which also is unknown. S. is pronounced by Neander 'the most original and profound thinker among the Monarchians'—i. e., the Unitarians; but unfortunately only a few fragmentary notices of his teaching have been preserved, and these by his theological adversaries. It appears that he did not reject the Scriptural phraseology used in speaking of the Godhead. 'Father,' 'Son,' and 'Holy Ghost' were sacred and venerable names to him as well as to orthodox Christians; but he was strongly opposed to the ecclesiastical conception of this Trinity, as a Trinity of distinct persons, or subsistences (*hypostases*), which he (like many persons since) held to be absurd and unthinkable, and argued that what is to be understood is a Trinity of manifestation or a Trinity of modes of the Divine Being; the single absolute Divine Essence—the *monas* or 'pure Deity,' unfolds itself in creation and the history of man as a Trinity. But he seems to have failed to note that the unchangeableness of God's being makes it indispensable in our thought to assign for this distinct manifestation in time some ontological basis in His eternal essence: his recognition of this fact, however, would not have brought him into accord with the church doctrine of the Trinity. His words, as quoted by Athanasius, are *He monàs platuntheisa gegone trias.* The 'energy' by which God called into being and sustains the universe is the 'Logos,' after whose image men were created; but when they had fallen from perfection, it became necessary for the 'Logos,' or Divine Energy, to hypostatize itself in a human body, in order to raise and redeem them; hence, in the man Christ Jesus dwelt the fullness of the Godhead *bodily;* while the same Divine Energy, operating spiritually and impersonally in the hearts of believers, is the 'Holy Ghost.' His important divergence from ecclesiastial orthodoxy was his tenet that these Divine 'manifestations' were not eternal, but merely temporary; and that after the 'Logos' and the 'Holy Ghost' had done their work, they would be reabsorbed in the absolute Deity—the *trias* would again resolve itself into the *monas;* or, in the language of St. Paul, that 'God would be all in all.' Epiphanius alleges that S. derived his system from an apocryphal 'gospel to the Egyptians;' and there are (as Neander points out) many points of resemblance in Sabellianism to both the Alexandrian Jewish theology in general, and the particular document referred to. The followers of S. were formally suppressed by the church in the 4th c.; but his doctrine—which, divested of its Gnostic and Neo-Platonic phraseology about 'emanation' and 're-absorption,' etc., is one of several possible forms of Unitarianism—has seldom lacked advocates in any subsequent age.—Sabellianism, while philosophically Unitarian, is rather a speculation on the Divine Being as indivisible into persons, than a denial of the deity of the Lord Jesus Christ, whom indeed it identifies as the very manifestation of God Himself.—Consult Tillemont's *Memoirs;* Lardner's *Credibility of the Gospel;* and Church Histories of Mosheim, Neander, and Milman.

SABER : see SABRE.

SABIAN, n. *sā'bĭ-ăn*, or SABÆAN, n. *să-bē'ăn* [Heb. *saba*, army or host—applied particularly to the heavenly host of the angels, or to the celestial bodies] : a worshipper of the host of heaven ; one of an ancient sect of star-worshippers in Persia and Arabia. Also an adherent of a heathen sect which arose in the 9th c., and borrowed its religion from ancient Syria and from Greece : ADJ. pertaining to the Sabians or their worship (also see SABIANS, below). SA'BIANISM, n. *-ĭzm*, or SABÆANISM, n. *să-bē'ăn-ĭzm*, or SABEANISM, n. worship or doctrines of the Sabians : see ZABISM.

SA'BIANS, or SABE'ANS, or SABÆ'ANS (oriental sect) : see CHRISTIANS OF ST. JOHN.

SABICU, *săb-ĭ-kō'* (*Acacia formosa ;* see ACACIA) : tree whose wood is remarkably hard and tough ; native of Cuba. The wood is of dull red color, and close short grain. It was used for the stairs of the Crystal Palace in Hyde Park 1851, showing little wear in six months.

SABINE, *săb'ĭn*, Sir EDWARD: major general in the Brit. army, and renowned physicist: 1788, Oct. 14—1883, June 26; b. Dublin. He obtained a commission as second lieut. in his 15th year, and accompanied Ross and Parry as astronomer in their expedition (1818–20) (see NORTHWEST PASSAGE). In a series of voyages he made very valuable magnetic observations. In 1836 and 7 he made important reports to the Brit. Assoc. on the variations of magnetic intensity at different places; and similar reports from that time till 1872: see *Transactions* of the Brit. Assoc., and of the *Royal Soc.;* also *Philosoph. Transactions*. His labors led to discovery of the laws of 'magnetic storms,' of the connection between certain magnetic phenomena and the changes of the solar spots, and of the magnetic action (independently of heat) of the sun and moon on the earth. Largely to him was due the establishment of magnetic observatories in all parts of the world, those in the Brit. colonies being under his control for many years. In 1850 S. became vice-pres. and treasurer, and 1861 pres. of the Royal Soc. He was for 8 years sole gen. sec. of the Brit. Assoc., and its pres. 1853. In 1856 he was raised to the rank of maj.general.

SABINE, *sâ-bēn'*, RIVER: stream rising in n.e. Tex., and flowing s.e. 250 m. to the e. boundary of Tex.; whence, flowing s., it forms the e. boundary, and empties through Sabine Bay, 18 m. long by 9 m. wide, into the Gulf of Mexico. The S. is 500 m. long, but shallow and unnavigable.

SABINES, *sā'bīnz* (Lat. *Sabini*): ancient people of central Italy, whose territory lay n.e. of Rome. The exact boundaries are not known ; but it appears to have extended from the sources of the Nar, on the borders of Picenum, as far s. as the Anio. The nations conterminous to the S. were the Umbrians on the n., Umbrians and Etruscans on the w., Latins and Æqui on the s., Marsi and Picentini on the e. The entire length of the Sabine territory did not exceed 85

n., reckoning from the lofty and rugged group of the Apennines, anc. known as the *Mons Fiscellus* (now *Monti della Sibilla*), to Fidenæ on the Tiber, about 5 m. from Rome. The inhabitants had no inducements to congregate in large towns. Their country was an interior region; much of it, especially in the n., mountainous and bleak, though the valleys were (and are) often richly productive; and thus cut off from the seaboard, and from easy access to their neighbors they (like the other sequestered races of the Apennines) scarcely advanced beyond the rude simplicity of their highland hamlets. The S. were a brave, stern, religious race, whose virtues were austere and homely. Livy notes the 'stern and grave discipline of the old Sabines;' and the poets of the Empire—Horace, Virgil, Juvenal, etc., are fond of contrasting their simple, uncontaminated modes of life with the vicious luxury and dissipation of the capital. What part, if any, they had in founding Rome is not known (see Rome). Their native tutelary deity was 'Sancus,' or 'Semo-Sancus' = Lat. *Sanctus*, the 'Holy' or 'Venerable;' but like the other Latino-Sabellian races, they worshipped also Jove, Mars, Minerva, Sol, etc. That the S. were an ancient people in Italy, is certain. They were probably most nearly allied to the Umbrians, whose tutelary god also was 'Semo-Sancus;' but becoming numerous they sent forth colonies which founded new nations to the s. and e., the Picentes, Peligni, Samnites (q.v.) etc.; while the Samnites (a name essentially the same as *Sabini;* the Greek form *Saunitai* = *Sav-nitæ* = Oscan name *Safini* or *Sabini*) in their turn became progenitors of the Lucanians, Campanians, and Bruttii. Hence the epithet, *Umbro-Sabellian*, among classical ethnologists, to denote the whole of these kindred races, who were allied also, but less closely, to the Latins (q.v.) and Oscans (see Osci). Of the Sabine language, only a few words remain: these indicate that it differed from the Latin only dialectically: thus, Lat. *hircus*, Sab. *fircus;* Lat. *hostis*, Sab. *fostis*, etc.; analogous to the Aberdeen *filk* for 'whilk,' *fat* for 'what,' etc. See further, Rome (History).

SABLE, n. *sā'bl* [OF. *sable;* It. *zibellino;* Ger. *zobel;* Russ. *sobole*, the sable]: species of Marten (q.v.): the fur of the animal: Adj. black; very dark. Sables, n. plu. *sā'blz*, in *OE.*, articles of dress faced or adorned with sable fur; a rich and courtly costume; habiliments of mourning: in *her.* tinctures implying black, represented by perpendicular and horizontal lines crossing.—The *Sable* (*Martes zibellina*) is found in n. Asia, and n. Russia in Europe; it belongs to the weasel family (*Mustellidæ*). It is so nearly allied to the Common Marten and Pine Marten, that it is difficult to state satisfactory specific distinctions. The American pine marten is often called the American sable. The feet are covered with fur, even on the soles, and the tail is perhaps more bushy than in martens. The length, exclusive of the tail, is about 18 inches. The fur is brown, grayish-yellow on the throat; and small grayish-yellow spots are scattered on the sides of the neck. The whole

fur is extremely lustrous, hence of the very highest value, an ordinary S. skin being worth $30 or $35, and one of the finest quality $75. The fur attains its perfection in the beginning of winter, and the pursuit of the S. at that season is a difficult and adventurous enterprise. The S. is a native of Siberia, widely distributed over that country, and found in its coldest regions wherever forests extend. Geographical discovery in e. Siberia has been much indebted to the expeditions of the hardy and daring S.-hunters, exploring new regions at the worst seasons of

Sable (*Martes zibellina*).

the year, and spending dreary months far from human abodes. The S. is taken by traps, which are a kind of pit-fall, it being necessary to avoid injury to the fur; or by tracking it through the snow to its hole, and placing a net over the mouth of the hole. It is very wary, and not easily captured. It makes its nest in a hollow tree, or sometimes, it is said, by burrowing in the ground; and lines it with moss, leaves, and grass. From this, it issues to prey on hares and smaller animals of almost any kind, its agility enabling it even to catch birds among the branches of trees. When food is scarce, it will eat the remains of an animal on which a larger beast of prey has feasted, and is said even to satisfy its hunger with berries in winter, when animal food is not to be had.

Sable.

SA'BLE ISLAND: see Nova Scotia.

SABLES D'OLONNE, Les, *lā sâb'l do-lŏn':* seaport of France, dept. of Vendée. It owes its early importance to Louis XI., who excavated the port, and raised the fortifications. In 1688, its merchant marine was more important than that of either Nantes or Rochelle. The commerce is in grain, wines, cattle, fish (sardines), salt, etc. Pop. about 10.000.

SABOT, n. *sa-bō'* [F. *sabot*]: wooden shoe much used by the French and Belgian peasantry, especially in moist and marshy districts, as protective of the feet from external moisture. The making of sabots is an important French industry, chiefly in the depts. of Aisne, Aube, Maine-et-Loire, and Vosges. After being made, they are subjected to the smoke of burning wood, till they acquire the reddish color prized in certain countries.

SABOTIERE, n. *sâ-bō'tĭ-ār* [F. *sabotière, sarbotière,* an ice-pail, for *sorbetière*—from *sorbet,* sherbet, an ice]: a French apparatus for making ices.

SABRE, n. *sā'bėr* [F. *sabre*—from Ger. *säbel,* a sabre: Hung. *szablya,* a sabre—from *szabni,* to cut]: sword for cavalry, with a broad and heavy blade, thick at the back that the blow or thrust may carry more force, and having the edge usually a little curved backward at the point like a scimitar: V. to wound or kill, as with a sabre. SA'BRING, imp. *-ĭng.* SA'BRED, pp. *-bėrd.*

SABRETASCHE, or SABRETACHE, n. *sā'bėr-tăsh* [F. *sabre,* a sword: Ger. *tasche,* a pocket: Ger. *säbeltasche*]: leathern case or pocket worn by some cavalry officers at the left side, and suspended from the sword belt: useless square accoutrement which dangles against the legs of officers, and purports to be a pocket for conveyance of dispatches, etc., but probably is seldom used. It is covered with gold brocade, the emblems of the regiment, and other devices.

SABRE-TOOTHED TIGERS: extinct cats of the family *Machœrodontidæ* (or *Nimravidæ*), a group whose remains occur as fossils from the Eocene up to the Pleistocene. They differ from ordinary cats (*Felidæ*) in several anatomical features, having some peculiarities which ally them to the bears, and others recalling existing viverroids, as the foussa (*Cryptoprocta*). They are remarkable for the character of the dentition, which in the earlier genera comes near showing the complete number of teeth, but displays a steady tendency as the family history is followed toward the reduced number possessed by existing cats. At the same time the dentition is often distinguished by the huge size of the upper canines, which in some cases were five or six times as long as the neighboring teeth, and have been justly called 'sabre-teeth.' These tushes reached their highest development in the genus *Machœrodus,* whose species were of very wide distribution, occurring in both North and South America and in Europe. These carnivores were of various sizes, up to dimensions equal to those of modern tigers, and so little different in general from true cats that Cope places them within the *Felidæ.* It began in the Eocene and continued down almost or quite to the Glacial Period, when the type seems to have become extinct because the great canines had overgrown usefulness and become a hindrance instead of a help in getting a living. They finally became so large that the animal

could not open its mouth wide enough to make use of them in biting, and the space between them would admit none but a very small piece of meat to enter, even if a large piece could be torn away. 'Even when the mouth opens so far as to allow the mandible to pass behind the apices of the canines,' remarks Cope, 'there would appear to be some risk of the latter being caught on the point of one or the other canine, and forced to remain open, causing early starvation.

SABRINA LAND, *sâ-brē'nâ:* discovered in the Antarctic Ocean 1839, Mar. 20, by Balleny; lat. 69° 58′ s., long. 121° 8′ e. See ANTARCTIC OCEAN.

SABULOUS, a. *săb'ū-lŭs* [L. *sab'ulum,* coarse sand, gravel]: sandy; gritty. SAB'ULOS'ITY, n. *-lŏs'ĭ-tĭ,* sandiness; grittiness.

SAC, n. *săk* [AS. *sacu,* lawsuit]: in *Eng. law,* the ancient privilege enjoyed by the lord of the manor of holding courts.

SAC, n. *săk* [AS. *sacc;* F. *sac*—from L. *saccus,* a sack, a bag]: a bag or membranous receptacle.

SACCADE, n. *săk-kād'* [F. *saccade,* a jerk]: a sudden check or jerk with the bridle.

SACCATE, n. *săk'kāt,* or SAC'CATED, a. [L. *saccus,* a bag]: in *bot.,* furnished with a sac, or having the form of one; gibbous.

SACCHARIC, a. *săk-kăr'ĭk* [L. *sac'chărum,* sugar—from Gr. *sakchar, sakcharon,* sugar], ($C_6H_{10}O_8$): applied to bibasic acid, product of the action of nitric acid, under certain conditions, on grape and cane sugar, or on starch, gum, and lignine. It occurs as a colorless, inodorous, deliquescent, gummy, uncrystallizable mass, freely soluble in alcohol. It is sufficiently powerful to dissolve iron and zinc, with extrication of hydrogen. SACCHARIFEROUS, a. *săk'ka-rĭf'ĕr-ŭs* [L. *fero,* I produce]: yielding sugar. SACCHARIFY, v. *săk-kăr'ĭ-fī* [L. *facĭō,* I make]: to convert into sugar. SACCHAR'IFYING, imp. SACCHAR'IFIED, pp. *-fīd* (see SACCHARIN). SACCHARINE, a. *săk'ka-rīn* or *-rĭn,* pertaining to sugar; having the qualities of sugar; sweet. SACCHARINE FERMENTATION, the fermentation by which starch is converted into sugar, as in the process of malting. SAC'CHARITE, n. *-rīt,* a species of felspar, found in fine granular masses, of a white color. SAC'CHAROID, a. *-royd,* or SAC'CHAROI'DAL, a. *-roy'dal* [Gr. *eidos,* resemblance]: having a texture resembling that of loaf-sugar. SAC'CHARIM'ETER, or SAC'CHAROM'ETER, n. *-rŏm'ĕ-tĕr* [Gr. *metron,* a measure]: instrument for indicating the quantity of sugar in a liquid, based on the fact that saccharine solutions rotate the plane of polarization of a ray of light passing through them—some kinds of sugar rotating the plane to the right, others to the left (see POLARISCOPE): in its mechanical working the instrument resembles a hydrometer or aerometer (q.v.). SAC'CHARIM'ETRY, n. *-ĕ-trĭ,* or SACCHAROM'ETRY, art or method of

ascertaining the quantity of saccharine matter in a liquid. SAC'CHARUM, n. *-rŭm*, genus of grasses widely distributed through the tropical parts of the world, including the sugar-cane (q.v.). SAC'CHAROSE, n. *-rōz*, chemical name for cane-sugar.

SACCHARILLA, n. *săk-a-rĭl'a:* a kind of muslin.

SACCHARIN, *săk'a-rĭn*, $C_6H_4<^{CO}_{SO_2}>NH$, benzoic-sulphinid, a sweet substance discovered by Remsen and Fahlberg in 1879. It is prepared from toluene by a series of chemical processes. White crystals soluble in hot water, alcohol, and ether. Its characteristic and most valuable property is its intense sweet taste, being about 550 times sweeter than cane-sugar, so that a solution of one part in ten thousand parts of water has a perceptible taste. It has an extensive use as a sweetening agent in the manufacture of various beverages, preserves, jellies, etc., and though used by diabetic patients who cannot use sugar, it is a question if it does not do harm because of the extra effort required to expel it from the system. It has no food value whatever. Saccharine forms salts with bases, the sodium salt being frequently used in place of saccharin because of its greater solubility.

SAC (*sâk*) CITY: Iowa, county-seat of Sac co.; on the North Fork of the Raccoon river, and on the Chicago, M. & St. P. and the Chicago & N. W. railroads; about 42 m. w. by s. of Fort Dodge. It is in an agricultural region where considerable attention is given to raising live stock. The chief manufacturing industries are connected with farm products. The trade is chiefly in farm and dairy products, flour, and agricultural implements. The educational institutions are the Sac City Institute (Baptist), a high school, public elementary schools, and a public library. Pop. 2,200.

SACCO-, prefix, *săk-o:* furnished with a sack or pouch, or any sack-like process or organ.

SACCOLABIUM, n. *săk-o-lā'bĭ-ŭm* [prefix *sacco-;* mod. L. *labium*, lip]: in *bot.*, a large genus of *Sarcanthidæ;* named from a pouch in their lip. Beautiful orchids, epiphytes, from India and Madagascar, now frequently cultivated in greenhouses.

SACCOMYIDÆ, *săk-ō-mī'ĭ-dē* [Gr. *sakkos*, sack; *mus*, mouse]: family of N. Amer. rodents, characterized by fur-lined cheek-sacks not opening into the mouth, and by long saltatory hind legs; also by peculiar details of skull structure. There are four molars on each side of either jaw; in one tribe, the *Perognathinæ*, the upper incisors are smooth and wide; in the *Saccomyinæ*, narrow and furrowed; and, in the *Dipodomyinæ*, smooth, while the molars are without roots. There are six or more species, in the west and extreme south. They are not to be confounded with the common so-called jumping mice. Some are very small; others equal rats in size.

SACCOTOO′: see SOKOTO.

SACCULE, n. *săk′ūl* [L. *sac′cŭlus*, a little bag—from *saccus*, a bag]: a little sac; a satchel; a cyst or cell. SACCULI, n. plu. *săk′ūl-ī*, any little cells or inclosures, as the sporangia inclosing the spores of the club-mosses: any minute investing membranes.

SACELLUM, n. *sa-sĕl′lŭm* [L. dimin. from *sacrum*, a sacred place]: in *Rom. arch.*, a small unroofed inclosure containing an altar sacred to a deity; in *Eccles. arch.*, a small monumental chapel within a church; generally taking the form of a square canopied inclosure, with open sides formed by stone screens, the tomb in the centre being used as an altar, and having an altar screen at its head. Within these chapels, masses were said for the repose of the souls of those buried there.

SACERDOTAL, a. *săs′ėr-dō′tal* [L. *sacerdōtālis*, sacerdotal—from *sacerdos* or *sacerdōtem*, a priest—from *sacer*, sacred; *do*, I give]: pertaining to priests or the priesthood; priestly. SAC′ERDO′TALLY, ad. *-tal-lĭ*. SAC′ERDO′TALISM, n. *-ĭzm*, the spirit of the priesthood.

SACHEL, n. *săch′ĕl:* see SATCHEL.

SACHEM, n. *sā′chĕm:* a chief among some of the Indian tribes of N. America. SACHEMDOM, n. *sā′chĕm-dom*, the government or jurisdiction of a sachem. SACHEMSHIP, n. *sā′chĕm-shĭp*, the office, dignity, or position of a sachem; sachemdom.

SACHET, n. *săch′ā* [see SACK 1]: a small bag like a diminutive cushion to contain an odorous substance.

SACHEVEREL, n. *sa-chĕv′ėr-ĕl* [after Dr. *Sacheverell*]: an iron door or blower to the mouth of a stove.

SACHEVERELL, *sa-shĕv′ėr-ėl*, HENRY, D.D.: 1674–1724, June 5; b. Marlborough, where his father was rector of St. Peter's Church, noted for his high church principles. The youth was educated at Magdalen College, Oxford; obtained a fellowship, and took the degrees M.A. (1696), B.D. (1707), D.D. (1708). In 1705 he became preacher of St. Saviour's, Southwark; and 1709, he delivered the two sermons in which he attacked with rancor the principles of the Revolution Settlement, asserted the doctrine of non-resistance, and decried the Act of Toleration. The whig govt. of the hour caused his impeachment for high crimes. His trial before the house of lords 1710 resulted in his being found guilty, and suspended from preaching for three years, the obnoxious discourses being ordered to be publicly burned by the hangman. A fury of popular excitement ensued with excesses by the high-church party which gathered to his defense; and S. became for the time the most popular man in the kingdom, so that the general election which followed overthrew the administration. When in 1713 his sentence expired, as a special honor he was appointed by the new house of commons to preach before them the sermon on the anniversary of the Restoration, and was presented to the rectory of St. Andrew's, Holborn. Subsequently he was scarcely heard

of. His character was essentially weak, vain, and shallow, his spurious importance was thrust upon him by the accident of foolish activity in a special concurrence of circumstances. See Burton's *Reign of Queen Anne* (1880).

SACHS, *sâks*, HANS: most prolific and most important German poet of his time: 1494, Nov. 5—1576, Jan. 25; b. Nürnberg, where his father was a tailor. At school, he learned the rudiments of Latin, but at no time was he a scholar in the strict sense of the term, though he was certainly widely-informed. About the age of 15, he was sent to learn shoemaking; his love of verse, however, led him to become also a disciple of Leonhard Nunnenbeck, weaver and *meistersinger* in his native town. On finishing his apprenticeship, S., as was the custom of craftsmen, made a sort of pilgrimage through Germany, to the verse-making schools or corporations organized by the trade-guilds in the cities, whose members, known as *meistersingers*, had, since the disappearance of the older *Minnesingers* (q.v.), or minstrels of chivalry, become the chief representatives of German poetry. On his return to Nürnberg, he began business as a shoemaker, prospered in his calling; and after a long, cheerful, and happy life, died at the age of 82. S. was twice married—first to Kunegunda Kreutzer, who bore him five sons and two daughters; afterward, in his 66th year, to Barbara Harscher. His grave is still seen in St. John's churchyard, Nürnberg.—S.'s career as an author is divided into two periods. In the first, he shows interest mainly in the occurrences then agitating Germany. It was the epoch of the Reformation of Luther, whose praises he celebrated (1523) in an allegorical tale, *Die Wittenbergisch Nachtigal*, while his poetical fly-sheets (of which about 200 are known) greatly furthered the Prot. cause. In the second period, his poetical activity was turned more to delineation of common life and manners. His poetry is distinguished by its heartiness, good sense, homely genuine morality, and freshness; its clear and healthy humor, and skilful manipulation of material. It is deficient in high imagination and brilliant fancy, and contains large tracts of prosaic, insipid verse. S.'s best productions are his *Schwänke*, or Merry Tales, whose humor is sometimes unsurpassable. MSS. copies of S.'s poems —some in his own handwriting—are in the libraries at Zwickau, Dresden, Leipzig, and elsewhere. When S. had reached the 52d year of his career as a poet, he had written 34 vols., containing more than 6,200 pieces, among which were 4,275 *meistergesänge* (of little value), 208 comedies and tragedies, about 1,700 merry tales, secular and religious dialogues, proverbs, and fables; 7 prose dialogues, and 73 songs, secular and devotional. The first ed. of his works was pub. Augsburg 1558; but the best is that of Willer (5 folio vols. 1570–79); a quarto edition, the *Kemptener*, appeared 1612–17, repub. Augsburg 1712. After the middle of the 17th c. S.'s poems were neglected, but were recalled to favor by Goethe's pleasant poem, *Hans Sachs, Erklärung eines alten Holzschnitts vorstellend Hans Sachs's poetische Sendung* (1776).

SACK, n. *săk* [AS. *sacc;* L. *saccus;* Gr. *sakkos;* Heb. *sak*, a bag]: large bag of coarse hempen cloth or canvas. In Britain, the term sack is used as a measure of about 4 bushels; 112 lb. of coals; 280 lbs. of grain, meal, or flour (2 corn-sacks being equal to one quarter of grain); 364 lbs. of wool in Eng. Sack was the name also of a rude coarse cloak of our ancestors, and now of a loose upper garment. SACK'FUL, n. *-fûl*, as much as a sack will hold. SACK'ING, or SACK'CLOTH, n. the coarse cloth of which sacks or bags are made. SACK'CLOTH, n. *-klŏth* [*sack*, and *cloth*]: in *Scrip.*, coarse rough cloth worn for mortification, or as a mark of mourning or distress.

SACK, v. *săk* [F. *saccager*, to sack a town, so called from the use of a *sack* in removing plunder—from L. *saccus*, a sack or bag: Dut. *sacken*, to put up in sacks, to plunder]: to plunder or pillage, as a town or city after taking it by storm; to devastate: N. the pillage or plunder of a town or city, as by soldiery; devastation; booty or spoil. SACK'ING, imp. SACKED, pp. *săkt*. SACK'AGE, n. *-āj*, the act of storming and plundering a place. SACK'ER, n. *-ẽr*, one who sacks. TO GIVE THE SACK, *familiarly*, to dismiss from employment—that is, to send off bag and baggage.

SACK, n. *săk* [OE. *seck*, sack—from L. *siccus*, dry: Fr. *sec;* Sp. *seco*, dry]: name in common use in the time of Shakespeare, and occurring till the middle of the 18th c., denoting a kind of wine. The exact nature of this famous wine, the favorite beverage of Falstaff, and the origin of the name, have been much discussed. Sack or seck seems simply an English disguise of the Spanish *seco* (Fr. *sec*), applied to wines of the sherry genus, as distinguished from the sweet wines; a term which we now translate by 'dry.' SACK-POSSET, a posset made of sack-wine, milk, eggs, etc.

SACKBUT, n. *săk'bŭt* [F. *saquebute*, a sackbut—from Sp. *sacabuche*, a sackbut, the tube of a pump—from *sacar*, to draw; *buche*, the stomach—as if the breath, in using the instrument, were drawn up from the stomach: Sp. *sacar*, to draw: OF. *sacquer*—from L. *saccus*, a bag]: name of the trombone when introduced into England; a kind of trumpet drawn out or shortened by means of sliders, formerly used as a bass in concerts: in *Scrip.*, supposed by some to be a kind of harp or lyre.

SACKCLOTH, SACKING: see under SACK 1.

SACK-DOUDLE, v. *săk-dŏ'dl* [Ger. *dudel-sack*, a bagpipe]: to play on the bagpipe.

SACKET, *săk'ĕt*, DELOS BENNET: soldier; 1822, Apr. 14—1885, Mar. 8; b. Cape Vincent, N. Y. He graduated from West Point 1845, was brevetted 1st lieut. for services in the Mexican war, was instructor at West Point 1850–55, and in the latter year was promoted capt. of cavalry. He served on frontier duty at various points; in the civil war was staff-officer in the army of the Potomac, served on the board to organize invalid corps, and was inspector of various departments. He was brevetted brig.gen. and maj.-gen. 1865, and, with the rank of brig.gen., succeeded Gen. Marcy 1881 as senior inspector-gen. U. S. army.

SACKETTS (*săk'ĕts*) HARBOR: N. Y., village, in Jefferson co.; on Black River bay, the inlet through which Black river discharges its waters into Lake Ontario; and on the Rome & Watertown railroad, which is a branch of the New York Central & Hudson River railroad. The village is about 10 m. from Watertown, 8 m. from Lake Ontario, and 170 m. w.n.w. of Albany. It has a good harbor, large enough to accommodate vessels of the largest size, and it has steamer connections with several of the lake ports. Sacketts Harbor is one of the oldest places on the northern frontier; in 1809 the Oneida, the first United States war vessel, was built here. In the war of 1812 the village was the scene of several engagements, and was an important United States naval station. The frigates Madison and Superior, war vessels, were made here in 40 and 80 days respectively, from the time the timber was cut. A third warship was nearly completed when peace was restored; the hulk remained in the yard for a number of years. The United States military station, Madison Barracks, is located here. Sacketts Harbor is in an agricultural region, and although it has good water power, there is but little manufacturing. Pop. exclusive of garrison (1910) 868.

SACKVILLE, *săk'vĭl*, CHARLES, 6th Earl of DORSET: English courtier and poet: b. 1637, Jan. 24; d. Bath, 1706, Jan. 29. He became a wit and roisterer in the company of Charles II., served under the Duke of York in the sea fight with the Dutch in 1663 and is said to have written or retouched on the night before the engagement of June 3 his famous song, *To All You Ladies Now on Land.* He succeeded to his title in 1677, but did not stand well in the favor of James II., and later became an ardent supporter of William of Orange, under whom he was lord chamberlain of the household from 1689 to 1697, and three times one of the regents during the king's absence. He was a patron of poets like Prior, Wycherley and Dryden, and from the last named received the dedication of the *Essay on Satire.*

SACKVILLE, LIONEL SACKVILLE SACKVILLE-WEST, Baron: English diplomatist: b. Cambridgeshire, 1827, July 19. After a private education, he entered the diplomatic service in 1847, was made secretary of legation at Turin (1858), Madrid (1864), Berlin (1867), and Paris (1868), and was envoy extraordinary and minister plenipotentiary successively to the Argentine Confederation (1872-8) and to Spain (1878-81). In 1881 he was appointed minister to the United States, and in 1888 with Joseph Chamberlain and Sir Charles Tupper negotiated the fisheries treaty of that year. In 1888, Oct., he received a letter from one C. F. Murchison, who, representing himself as an Englishman naturalized in the United States, asked for which party he should vote in the ensuing presidential election. The minister in reply advised his correspondent to vote the Democratic ticket

as favorable to English interests. The Murchison letter was generally regarded as a trap set for the embarrassment of the minister. His recall was at once asked for, and in default of a prompt compliance with the request the Department of State sent him his passports Oct. 30.

SACKVILLE, THOMAS, Earl of Dorset and Baron Buckhurst, English statesman and poet: b. Withyham parish, Sussex, 1536; d. London, 1608, Apr. 19. He was a member of the University of Oxford, but removed to Cambridge, and afterward became a student of the Inner Temple. At both universities he was distinguished for his performances in Latin and English poetry, and in the Temple wrote the last two acts of the tragedy of *Gorboduc, or Ferrex and Porrex* (1565). Of a poem intended to comprehend a view of the illustrious but unfortunate characters in English history, entitled the *Mirror for Magistrates,* he finished only a poetical preface (the *Induction*) and one legend on the life of the Duke of Buckingham. The work was completed by George Ferrers and Richard Baldwin (1559-63). He sat in the Parliament assembling 1558, Jan. 20, and in the first two Parliaments of Elizabeth (1559-63), after which he traveled. In 1586 he was made a member of the court appointed by Elizabeth to try Mary Queen of Scots. In 1598 he was joined with Burleigh in negotiations for peace with Spain, and renewed a treaty with the United Provinces. On the death of Burleigh, he became lord high treasurer. In 1601, Jan., he was appointed lord high steward, and presided at the trial of the Earl of Essex. On the accession of James I. his post of treasurer was confirmed to him, and in 1604 he was created Earl of Dorset. He ranks among the most prudent and able of the ministers of Elizabeth, was a good speaker and a still better writer. The tragedy of *Gorboduc,* the subject of which is a sanguinary story from early British history, is the first example in English of regular tragedy in blank verse. Sackville's share is inferior in literary value to his *Induction,* called by Sidney Lee the greatest English poem between the *Canterbury Tales* and the *Faerie Queene.*

SACO, *saw'kō:* city in York co., Me.; on the Saco river, 6 m. from its mouth, and on the Boston & Maine railroad; 14 m. w.s.w. of Portland. The river is navigable from Saco to the ocean about 9 months in the year, and having a fall of 40-50 ft. affords the city excellent water-power. The city is connected with Biddeford, from which it was set off 1762 by a bridge. It received a city charter in 1762. The chief manufacturing establishments are cotton mills, boot and shoe factories, lumber mills, and factories producing belting, brushes, and cotton-mill machinery. York Institute, founded 1866; York Academy and other schools, churches, two libraries and fine business blocks are attractive city features. Nearby is Old Orchard, a favorite seaside resort. Pop. (1910) 6,583.

SA'CO RIVER: stream rising in the White Mountains of N. H., flowing s.e. through the s.w. portion of Maine, through Saco Bay, to the Atlantic Ocean. Its course of 160 m. is almost a continuous succession of falls, the last being but 4 m. from its mouth, affording water-power to numerous factories.

SACQUE, n. *săk:* a kind of loose gown or upper garment worn by ladies in the 17th and 18th centuries and introduced from France into England in the reign of Charles II. It hung loosely over the back and shoulders. Now also spelled sack.

SACRAL: see under SACRUM.

SACRAMENT, n. *săk'ra-mĕnt* [L. *sacramen'tum*, a solemn obligation or engagement, an oath—from *sacer*, sacred: It. *sacramento:* F. *sacrement*]: ecclesiastical name for a solemn religious rite instituted by Christ to be observed by His followers; the Lord's Supper, or the Eucharist; baptism 'an outward and visible sign of an inward and spiritual grace'; in the *Rom. Cath.* and *Gr. Chhs.;* baptism, the Eucharist, marriage, penance, confirmation, orders, and extreme unction, are called sacraments. SAC'RAMENT'AL, a. *-mĕnt'al*, pertaining to a sacrament; constituting a sacrament. SAC'RAMENT'ALLY, ad. *-lĭ.* SACRAMENTALISM [sometimes SACRAMENTARIANISM (q.v.)]: doctrine that the sacraments impart grace by an inherent virtue given them from God, and not merely through the recipient's faith. SACRAMENTALIST, one who holds the sacramental view. SAC'RAMENT'ALS, n. plu. *-alz*, rites which are of a sacramental character, but are not sacraments. SAC'RAMENTA'RIAN, n. *-ā'rĭ-an*, one who considers the sacraments mere outward signs, used also in the opposite sense, to denote one who holds to Sacramentalism (q.v.): see SACRAMENTARIAN, below: ADJ. pertaining to the sacraments. SAC'RAMENT'ARY, n. *-ér-i*, an anc. book of the Catholic Church, containing the prayers and ceremonies used in the celebration of the Eucharist: ADJ. pertaining to the Eucharist.

SAC'RAMENT (Lat. *sacramentum*, *mysterium*, Gr. *mysterion*): name given by theological writers and in common usage (though not so applied in Scripture) to certain religious rites, whose number as well as effects are the subject of much controversy between various bodies of Christians. The word *sacramentum*, in primitive classical usage, meant either the oath taken by soldiers on their first enrollment, or the sum of money deposited by suitors entering on a cause, and forfeited 'to sacred uses' by the unsuccessful party: and the corresponding classical Greek word *mysterion* meant the secret religious ceremonies (mysteries) practiced in the worship of certain gods. At a very early period of the Christian Church, both the Latin word and its Greek equivalent came to be applied specially to certain rites of the Christian ceremonial, and chiefly (as is commonly held by Protestants, exclusively) to those

of baptism and the Lord's Supper. For our purposes, it will be enough to state concisely the views of the several religious communities on this much controverted subject, which formed one of the earliest grounds of division between the Roman Catholic Church and the Reformers of the 16th century.

In the Roman Catholic Church, it is held that there are seven sacraments: Baptism, Confirmation, the Eucharist, Penance, Extreme Unction, Holy Orders, and Matrimony. For the special teaching of Rom. Catholics on each of these rites, see the several titles; but there are certain general principles regarding them all, on which the Rom. Cath. doctrine differs widely from that of the Reformed. Rom. Catholics define a S. to be a visible or sensible sign permanently instituted by Christ, and conveying real interior grace to the recipient, and they teach that all sacraments contain within themselves, as instruments—and when received with proper depositions, produce—such grace by the virtue imparted to them by God, and not merely through the faith of the recipient; though they hold that proper dispositions on the part of the recipient, as sorrow for sin, love of God, pious resolves, etc., are conditions indispensable for the efficacy of the sacramental rite: see Opus Operatum. Of three of the sacraments, Baptism, Confirmation, and Holy Orders, it is held that they imprint a 'character,' and therefore that they can be received only once. The others may be repeatedly received, but under conditions (see each separate title.) Two things are held to enter into the constitution of the S.—viz., the 'matter' and the 'form.' By the 'matter' is meant the material element or the physical action whereby that element is applied to the recipient; as water in baptism, oil in extreme unction, and in both the act of washing or of anointing. By the 'form' is understood the form of words employed by the minister in communicating to the recipient the external rite in which the sacramental act consists. The minister of a S. is the person supposed to be divinely authorized to impart it. The minister is different for different sacraments (see the titles).

The Reformed Churches have for the most part discarded these views. By the majority of them, the sacraments are held to be ceremonial observances, partly designed as a solemn act, by which each individual is admitted to membership, or desires to make solemn profession thereof; partly intended to stimulate the faith and excite the fervor and the pious dispositions of the recipient, to which dispositions alone, as recipient of Divine grace, all the interior effects are to be ascribed. As to the number of rites called by the name, almost all Protestants agree in restricting it to two—Baptism and the Lord's Supper; though some of the rites which Rom. Catholics regard as

sacramental are retained by some Prot. communities as religious observances. In the English Church, however, there has always been a school in which opinion tending toward the Rom. Cath. view has prevailed. Not only has this school ascribed to the two rites of Baptism and the Eucharist or Lord's Supper (q.v.) the power of producing an interior grace (which in Baptism is called regeneration); but many of them have been willing to call the other rites, especially confirmation, penance, and holy orders, by the name of S., though of a secondary character, and not 'generally necessary to salvation': see TRACTARIANISM.

SACRAMENTA'RIAN: name given in the 16th c. to the party (Calvinists, Zwinglians) among the Reformers who separated from Luther on the doctrine of the Eucharist; afterward applied similarly in the Anglican Church. [The word in later controversies has been applied in a meaning almost the reverse (see SACRAMENTALISM)]. Luther (q.v.) taught the doctrine of the real presence of the body and blood of Christ with the bread and wine (see LORD'S SUPPER: REAL PRESENCE). The first of his followers who called this doctrine in question was Andrew Carlstadt; and notwithstanding the protest of his leader, Carlstadt had many followers, the most active of whom were Capito and Bucer. The party became so considerable, that in the diet of Augsburg they claimed to present a special confession distinct from that put forward by the general body. The sacramentarian confession is known in history by the name Tetrapolitan Confession—from the four cities, Strasburg, Constance, Lindau, and Memmingen. The Tetrapoltian Confession rejects the doctrine of a corporeal presence, and though it admits a special spiritual presence of Christ which the devout soul can feel and enjoy, it excludes all idea of a physical presence of Christ's body. Simultaneously with this German movement, yet independent of it, was that of the Swiss reformer Zwingli, whose doctrine on the Eucharist was identical with that of Carlstadt, and who himself presented a private confession of faith to the Augsburg diet, in which this doctrine is embodied. The four cities named above continued for many years to adhere to this confession presented to the diet of Augsburg in their name; but eventually they accepted the so-called Confession of Augsburg, and were merged in the general body of Lutherans. On the contrary, the article of Zwingli on the Eucharist was in substance embodied in the confession of the Helvetic Church.

SACRAMENTO, *săk-ra-mĕn'tō:* city, port of entry, cap. of Sacramento co., Cal.; on Sacramento and American rivers, and on the Central Pacific and the Southern Pacific railroads; 86 m. n.e. of San Francisco; 9 sq. m. It is on a beautiful plain on the e. bank of the Sacramento river, directly s. of the mouth of the American; is laid out regularly with streets intersecting at right angles; is protected against floods, from which it suffered 1849 and 61, by substantial levees constructed 1862 (cost $200,000); owns its water-works system, operated from the Sacramento river (cost $190,000); and is lighted with gas and electric-

ity. The trade with the n. portion of the state, facilitated by the numerous railroads in the Central and Southern Pacific systems, is large and important; and trade with the s. part also is promoted by several lines of steamboats and sailing vessels, navigating the Sacramento for more than 100 m. above the city, and proceeding thence to San Francisco. There is much in S. that is suggestive of tropical life; abundant shade trees, beautiful lawns and flower-beds in the residence portion, orange trees, palms, ornamental plants, and grapes in large variety. The public buildings include the new state Capitol (cost $2,500,000), in a handsome park of 50 acres; U. S. Post-office and Court-house ($100,000); Co. Court-house, formerly the state capitol ($200,000); Crocker Art Gallery, 3-story brick and iron building, cost more than $100,000, and contains grand collections of minerals and paintings; Hall of Records (brick and iron, $50,000); County Hospital, pavilion plan ($75,000); State Library; Free Public Library; State Printing House; Art School; and public high school. Other buildings of note are the gov.'s mansion; Masonic Temple; Odd Fellows' Hall; exhibition building of the State Agricultural Soc.; and the Rom. Cath. Cathedral (cost $250,000). The capitol and several other public buildings are in the State Capitol park, a charming preserve; another delightful park is the City Plaza, containing 2½ acres of the handsomest lawn in the country, bordered with eucalyptus trees. S. contains the repair shops of the Southern Pacific R. R., flour and grist mills, foundries and machine shops, breweries, and other industrial establishments representing a capital invested of $7,300,000, and an annual output valued at $11,142,000. S. exports its products largely to China, Japan, and Australia.

The site of S. was included in the New Helvetia grant of the Mexican govt. to John A. Sutter (q.v.), who built a fort (1839) to protect his grant and his lumbermen. John Marshall (q.v.), leaving this fort to build a saw-mill for Sutter, on the American river, made the memorable discovery of the presence of gold. A town, laid out around the fort 1848, was incorporated 1850, made the state capital 1854, had the city and co. govts. consolidated 1858, and received a separate charter as a city 1863. The first railroad opened in Cal. (1856), extended from S. into El Dorado co. Fire did large damage 1852. Nov. 2. and 1854. July 13.—Pop. (1880) 21,420; (1900) 29,282; (1910) 44,696.

SACRAMENTO RIVER: large river in Cal., which, with the San Joaquin, drains the Great Central Valley. It rises in the n.e. part of the state, in the Sierra Nevada, by North and South Forks, where, during its s.w. course of 200 m., it is called Pitt river and Upper S.; thence it flows nearly due s., receiving numerous branches from the Sierra Nevada on the e. and the Coast Range of mountains on the w., until it unites with the river San Joaquin, and flows w. through San Pablo and San Francisco bays to the Pacific Ocean. It is navigable to Sacramento, 50 m. from San Pablo Bay, and for small vessels 150 m. further, its entire length being about 500 miles.

SACRARIUM, n. *sa-krā'rĭ-ŭm* [L. *sacrārĭum*, a shrine —from *sacer*, sacred]: among the *anc. Romans*, a domestic chapel or apartment in a house, devoted to some particular divinity; the adytum of a temple; that part of a church where the altar or communion table is situated.

SACRED, a. *sā'krĕd* [OE. *sacre*, to set apart, to consecrate; *sacred*, set apart: F. *sacré*, sacred—from *sacrer*, to consecrate, to swear—from L. *sacer*, sacred]: pertaining to God, or to His worship; pertaining to religion or religious uses; not profane; consecrated; dedicated; inviolable. SA'CREDLY, ad. *-lĭ*. SA'CREDNESS, n. *-nĕs*, the state of being sacred; the state of being consecrated to God, or to His worship; holiness. SACRED COLLEGE, n. the College of Cardinals at Rome. SACRED ISLE, a name given to Ireland from the many saints who once dwelt or taught there. SACRED-PLACE, n. in *law*, the place where a person is buried. —SYN. of 'sacred': holy; divine; venerable; religious; theological; reverend; devoted; hallowed; inviolable.

SACRED HEART, *sā'krĕd hârt*, LADIES OF THE: Roman Catholic religious order for promoting education of young ladies. It was organized at Paris, 1800, Nov. 21, under direction of Father Varin, by Madeleine S. L. Barat and Octavie Bailly. The school then established prospered, and within a few years branches were established in various countries; the first in the United States being opened at St. Louis about 1817. The members consecrate themselves to the Heart of Jesus, take vows of obedience and poverty, and though not connected with the Jesuits, have a similar organization.

SACRED HEART OF JESUS, FEAST OF: modern festival of the Rom. Cath. Church. Its origin is traced to a vision recorded of a French nun, of the order of the Visitation, named Mary Margaret Alacoque, who lived at Paray la Moniale, Burgundy, in the latter half of the 17th c. This devotion was at length approved by Pope Clement XII. 1732 and 36, and by Clement XIII. 1765. The festival is on the Friday after the octave of Corpus Christi. During recent years a fresh impulse has been given to the devotion, and 1873 numerous bodies of pilgrims resorted to Paray la Moniale; and several dioceses and countries were dedicated to the Sacred Heart by special and solemn ceremonial. The confraternities of the Sacred Heart are very numerous.

SACRED MUSIC: music used in or appropriate to Christian worship or other parts of Divine service; or devoted to illustration of some religious theme. Music has, from very early times, been connected with religious rites. It entered into the worship of the Jews, and both sacred and profane history tell us that, in the primitive Christian Church, the service consisted partly of music. Little is known regarding the kind of music used by the early Christian converts: it has been supposed to have been partly Greek, with intermixture of Hebrew melody. As early as the time of Ignatius, disciple of the apostle John, the Psalms of David were sung *antiphonally*, as practiced to

the present day—i.e., by two choirs responding to each other, which had doubtless been the practice among the Jews. At first, the whole congregation, clergy and laity, joined in the psalm; but difficulties and abuses having arisen from the growing neglect of musical culture, the Council of Laodicea, 363, found it necessary, for decency and order in worship, to prohibit the laity from singing in church except in certain very simple and popular chants. From that period till the Reformation, the music of the church was almost entirely surrendered to the clergy and trained musicians. See PSALMODY.

The first name of importance in the history of the music of the Western Church is St. Ambrose (q.v.), whose musical service (see AMBROSIAN CHANT) was reformed by Pope Gregory (see GREGORIAN CHANT). The use of the organ in churches dates from about the 9th c., and some centuries later, Counterpoint (q.v.) was introduced to a limited extent into the music. Among the corruptions which followed it, some are of a nature whose very mention startles us. Not merely were popular melodies of a secular nature often taken into church music, but the secular words were actually transplanted into the religious compositions, being habitually given out by the tenor voice, while the actual solemn words of the church service were being sung by soprano, alto, and bass. Papal bulls having vainly combated this abuse, it was brought under the cognizance first of the Council of Basel, then of that of Trent. The Council of Trent prohibited the performance of any mass or motet of which profane words formed a part, also of music founded on secular themes. Some compositions of Palestrina were singled out for praise, and their author was intrusted with the task of remodelling this part of worship. He composed three masses on the reformed principle, one of which, known as the *Missa papæ Marcelli* (so called as being a tribute of gratitude to the memory of that pontiff), may be regarded as having saved music to the church, by establishing a type far higher than anything that had preceded it, and still revered by all lovers of music. The *mass* (including the *offertory* and *gradual*) has always continued an important part of the sacred vocal music of the Rom. Cath. Church, and affords large scope for the higher qualities of musical composition.

Various new types of music sprang up in the different Prot. churches after the Reformation. The solemn and measured *Chorale* (q.v.), or melody to which psalms or hymns are sung in unison, though generally associated with the Luthern Church of Germany, was really handed down from a very early period. Psalmody in its modern sense may be considered to have originated in the 16th c., when Clement Marot, court poet of Francis I., translated 52 of the Psalms into French verse. Psalm-singing was at first a fashionable amusement of the gay courtiers of Francis; but being taken up by the Reformers, was soon discountenanced by the Rom. Catholics, and deemed a badge of Protestantism. See PSALMODY: HYMN.

SACRED MUSIC.

In the full choral service of the Church of England, as performed in cathedrals and collegiate churches, the greater part of the prayers and the litany are *intoned* or read in monotone (see INTONING), the monotone being occasionally varied by harmony at the close. The Psalms and *Gloria Patri* are chanted with accompaniment of the organ, as are also the various canticles; the latter, however, particularly the *Te Deum*, being often sung to more elaborate rhythmical music, called *services*. The form of the Anglican chant now used for the Psalms seems to have been invented by Tallis. In the single chant, each verse is sung to the same music; in the double chant, the whole occupies two verses. The antiphonal chanting, with the Anglican double chant, has sometimes been objected to as repugnant to the proper expression of the words, as coupling verses between which there is a full stop in the sense, and as placing a full stop when the sense runs on; and among the high-church party there has been a disposition to recur to the Gregorian chants, whose indefinite musical expression, absence of rhythm, and uncertain accent, give them a power of bending to the requirements of the words. The Gregorian chant has, however, not made its way into the service of any of the English cathedrals. The *anthem* forms a part of the complete musical service. It is somewhat similar in character to the motet of the Rom. Cath. and Luth. churches; a sacred cantata, in which the words are from the Psalms or other portions of Scripture; and the music is for solo, parts, or chorus, or a mixture of the three.

In the Presb churches of Scotland, psalmody, until recently, formed almost the entire music; but hymns also are now in general use. Hymns predominate among the English dissenters. Some years ago, church music in Scotland had fallen to the lowest state of degradation; but efforts have lately been made, with some success, to raise its character; and even organs, proscribed by the early Scottish reformers, and ever since in disfavor, have begun to be introduced; and chanting has been admitted into some Presb. churches. In the United States, hymns in rhyme and meter have formed the chief musical service of non-prelatical churches; but organs were early introduced into the Congl. churches of New England; and chanting is now taking a recognized place in nearly all denominations.

Of sacred musical compositions not intended to form part of the service of the church, most important is the *Oratorio* (q.v.), a composition either entirely dramatic, or combining the drama and epic, where the text is illustrative of some religious subject, and the music consists of recitatives, airs, part-songs, and choruses, accompanied by orchestra and organ.

SACRIFICE, n. *săk'rĭ-fīs* or *-fīz* [L. *sacrific'ium*, a sacrifice—from *sacer*, sacred; *facĭō*, I make]: act of offering, and often of burning a victim on an altar in honor of God, or of a heathen deity; the thing offered in sacrifice; loss made or incurred to effect some object, or to oblige another (see below): V. *-fīz* or *-fīs*, to offer to God in worship, or to a heathen deity, a slain victim on an altar; to destroy or give up for the sake of something else. SAC'RIFICING, imp. SAC'RIFICED, pp. *-fīst*. SAC'RIFICER, n. *-fī-sẽr*. SAC'RIFI'CIAL, a. *-fĭsh'al*, performing sacrifices; pertaining to sacrifice; including or consisting in sacrifice. SAC'RIFI'CIALLY, ad. *-lĭ*. SACRIFIC, a. *sa-krĭf'ĭk*, or SACRIF'ICAL, a. *ĭ-kal*, employed in sacrifice. SACRIF'ICANT, n. *-kant*, one who offers a sacrifice.

SAC'RIFICE: important element of divine worship, common to all nations of antiquity, therefore traced by many writers to a primeval revelation. The powers of nature, palpable in their effects for good and evil, occasioned in man, even in his rudest stage, fear or gratitude toward the unseen beings by whom he conceived those powers actuated. The next natural step was the outward manifestation of these feelings by a token which bespoke either thankfulness or conciliation. The supreme numina being conceived merely as superior men with exaggerated human wants, the means taken to gratify them were adapted to this conception. The best and first fruits of the soil, the most immaculate animals of the flock, were offered to the gods, that they might either partake of them or at least enjoy the sweet smell arising from the altar on which they were burned. The more the divine favor was sought for some special purpose, the more precious became the gift; and from the simple and childlike notion of establishing a certain kindly and permanent relation between the invisible powers and man, by the yielding up on the part of the latter a certain more or less precious portion of what the former had given him, there grew up monstrosities too horrible for belief did they not to some extent still exist. The undeveloped childlike instinct which offered the Deity a flower, a blooming bough, a golden fruit, was degraded into a superstition, ending in the theory that the divine revenge was to be gratified, the divine vanity flattered, and the deity made as generally pleased as could be by holocausts of human beings, friends or foes—nay, the dearer the being, the more impressive the self-abnegation, and the more the god must smile upon the donor. The Moloch worship—the mother placing her babe in the arms of the monstrous idol, and seeing it slowly burned—seems to exhaust all the horrors of human ingenuity.

In the most ancient and hallowed record of humanity, the Old Testament, we find the custom of S. on its early pages, and spoken of as a rite already established. S. is the cause of the first murder on record. Abraham is prevented by a voice from heaven from the slaughter of Isaac, to which he had deemed himself called by Jehovah; all the patriarchs, in fact, sacrifice, either independently or in ratification of a covenant; and the exodus itself was

brought to pass under the pretext of the people having to offer up their wonted S. in the desert.

According to the highest ancient authorities, both Jewish and Christian—of whom we mention only Maimonides and Ephraem Syrus—the Mosaic sacrifices were neither more nor less than a kind of divine concession to reach and educate the sensual nature of an uncultivated people, full of Egyptian reminiscences on the one hand, and surrounded by Canaanitish modes of worship on the other. It was, as Ephraem Syrus says, only at a very late period that Moses, by the command of God, in whose eyes the rites of priests and sacrifices have in themselves but little value, prescribed these observances to his people, on account of their weakness and hardness of heart—lest they might despise a 'naked' religion, and attach themselves to false gods, whose dazzling cultus surrounded them on all sides. In corroboration of this view, the prophets are cited, who repeatedly inveigh against S. as such, when, according to their view, the people were educated enough to do without this symbol and to worship God in truth and in spirit. (Comp. Jer. vii. 22; I Sam. xv. 22; Ps. l. 8–10; li. 18, 19; Is. i. 11, etc.) But the institution being deemed necessary for the time, legislation had to circumscribe it rigorously, making it as little hurtful as possible. Ceremonies contrary to morals and decency, such as were practiced in the temples of Canaan, the abominations of phallic rites, the sacrifices of virginity, and, finally, the offering up of human beings, were punished with instant death by the Mosaic law.

How the principal modes of sacrificial offerings, such as they had naturally developed, nearly alike everywhere throughout antiquity, and as they had obtained in the pre-Mosaic times among the Hebrews, were adopted in the Mosaic legislation, and adapted to its exalted religious character, we can only indicate here in briefest outlines. These pre-Mosaic sacrifices were chiefly of three kinds: first, the 'propitiatory,' i.e., an offering enjoyed by the Deity in any form that would be grateful to him, conciliate him, procure his aid and blessing in times of need or for some special undertaking; and would further obtain his forgiveness, if something had been done unwittingly that might have offended him. This kind of S., whether bloody or unbloody (e.g., harvest sacrifice), appears to have been fully burned (*Olah*). The second kind partook more of the nature of sacrificial meals, in which both the divinity, the priest, the man who offered the S., together with his friends, took part. Only the parts deemed choicest were burned upon the altar; the priests received some other parts, and the rest formed the grateful sacrificial repast (*Sebach Shelamim*). The last kind was the expiatory S., intended as an equivalent for some deadly crime, which either was not punishable by existing laws, or had been committed under circumstances that would not have warranted capital punishment. From the idea that the blood of the murderer was necessary for 'the cleansing of the blood that is shed' (cf. Num. xxxv. 33),

sprang the notion—so it appears—that there was expiatory power in the blood itself; and that further, the blood of an animal was a fitting representative of, and equivalent for that of the human criminal, who had only to transfer, as it were, his sin to the animal by placing his hands upon its head, and perhaps using a formula to that effect. The flesh of this animal was not deemed fit for the altar, and was probably burned at some other place (*Chattath Asham*). The Mosaic legislation finding such general elements ready, proceeded eclectically. They were partly embodied with considerable alterations, partly rejected unconditionally. The notion of the expiatory power of the blood was retained—with this modification, that the poor were allowed to use flour instead of meat for their sin-offerings. But the principal alterations introduced were the abolition of all polytheistic rites from the sacrificial service, of all the immoral, obscene, and horrible ceremonies connected with the heathen practice, and finally, the totally different definition and limits given to the 'sin-offering. While formerly, everything could be expiated by a S., henceforth, only unpremeditated sin could by this means be effaced; while there was no expiation for any premeditated crime; the law simply took its course in that case. One of the most characteristic exceptions, however, was that in favor of those who had denied the possession of some pledged article, or who had wilfully cheated or robbed their neighbors. If they were eager to make voluntary and ample restitution, 'the door of repentance was opened to them,' and they were allowed to make public expiation through sacrifice. Further, many things till then permitted were prohibited, and thus fell under the denomination of 'sin;' and certain purifications—beneficial in themselves—were connected with the expiatory S., and their practice thus strongly enforced. This extension of the notion of 'sin-offering' rendered a subdivision of it necessary; the more venial, or rather unconscious, transgressions, were, in the ritual, treated differently from those less pardonable.

While Mosaism thus seemed, in its adoption of the rite of S., to make one of the most important concessions to heathenism, this very rite was, on the other hand, calculated to attract the early Hebrews to the worship of Jehovah, while weaning them from the horrible pollutions connected with S. among the Canaanites. But more, during the primary stages of the people's existence, by inculcating observances at once hygienic and symbolic of purity and holiness, it served as a powerful means of education and culture. In order, however, that these beneficial consequences premeditated by the lawgiver should not be frustrated, it was necessary, above all things, to keep the strictest possible supervision over it; and this was best established by the legal transfer of the whole sacrificial service to one single spot of the land—finally, the Temple at Jerusalem. The 'heights' and their 'heathen abominations' were thus theoretically abolished, and the S. that only at one central point could be said to be offered up for the 'whole community of Israel.'

went far, under these circumstances, to awaken and to strengthen a common spirit of nationality and patriotism, which was further aided by the periodical pilgrimages. For details of the Jewish sacrifices, see the Old Test. generally.

As to the different opinions held by Jewish and Christian authorities regarding S., when offered up in expiation of a sin, either by the people or by individuals, suffice it here to mention that they are divided between the various notions of the offering being either a present to the offended deity, a civil punishment (*mulcta*), or, finally, a kind of substitute for the sinners themselves. The latter is the view held by many of the rabbinical writers as well as church Fathers. The life (Nephesh) of the animal or its blood (Lev. xvii. 11) was distinctly said to make 'the atonement for the soul.' This notion of a representative victim is one that belonged to the whole ancient world, and often finds expression in the Old Test. The sacrifice of the covenant (Jer. xxxiv. 18, etc.), the scapegoat (Lev. xvi. 21), and the like, are embodiments of this idea; which by Christian divines is held to have found its acme and final fulfilment in the sacrifice of God Himself, in the person of His Son, only-begotten, the Man, Christ Jesus—uniting in himself the priest, the offerer, and the sacrifice. In fact, the whole institution of sacrifices is held throughout the New Test. and the Fathers, to have been merely typical of this final act, by which the sin of man was expiated. See ATONEMENT: MASS.

The Jewish sacrifices, rejected already by the Essenes, ceased with the downfall of the Temple in Jerusalem; though the Samaritans, who claim to retain exclusively the Mosaic covenant, still continue this rite on Mount Gerizim at the Passover. The orthodox Jews, however, include in the prayers for the restoration of the visible sanctuary on Zion, also that of the restoration of the sacrifices 'in their order and proper rule,' 'of the priests to their service, and the Levites to their songs and hymns,' and each day, Sabbath, or Feast, the S. incumbent upon it is mentioned in the prayers; and on fast-days, especially on the day of atonement, the diminution of bodily substance supposed to arise from the abstinence, the 'fat and blood' may, it is supplicated, be considered by God as tantamount for that of the sacrificial animals, which, through their sins, the people are not now deemed worthy of offering up. The modern (extreme) party of reformed Jews, however, repudiate, together with the literal interpretation of the Messianic prophecies, also that notion of the sacrifices ever being restored.

We can only glance at the sacrificial customs among other nations of antiquity. The same feeling of dependence on supreme, invisible, but ever-present powers, engendered everywhere similar expressions of awe, fear, and gratitude. The gifts proffered differed, according to the degree of culture, the mode of life, and the products of the soil among the different peoples. No less was the significance attached to the gift different in proportion to

the mental development of those who offered; at one time considered as a present, to be taken and sensually enjoyed, by the Deity, at other times it assumed a higher and purely symbolical aspect, as an expression of repentance, reverence, gratitude. In the same proportion, the gifts themselves varied in their nature and their value. While Mongols and Tartars, Lapps and Negroes, most of the ancient nomad tribes in fact, generally sacrificed the milk and the uneatable parts of the animal only, its bones, horns, skin, etc.; the Greeks and Romans offered frequently thousands of the choicest, most immaculate animals, and the sacrificial vessels were with them, as with the Hebrews, wrough of the most precious metals. Votive offerings—arms, spoil, garments, tools, locks, poems, etc.—customary in the better days of Rome and Greece; and the sacrifice of chastity on the part of maidens and women—the custom chiefly of Babylon, Phœnicia, Cyprus, etc., likewise fall under the denomination of S. in its wider sense. Among the East Indians, Bactrians, Medes, and Persians, the sacrifices consisted of fruits, libations, animals, and the like, and were of many degrees and numbers: among the first-named, the study of the Vedas was reckoned as the first round in the sacrificial ladder. With the Persians (see GUEBRES: PARSEES), the priests at the Daruns S., instituted in honor of Zerdusht, the lawgiver, eat small unleavened cakes, and drink Hom-juice, which is to represent the blood of the prophet: they have sacrifices also for the souls of the deceased. The Buddhists offer flowers and first-fruits only; their animal sacrifices are represented by small animal figures kneaded of dough, offered up on certain occasions. The 'classical' peoples had their sacrificial debauches, which succeeded the primeval frugality in their offerings no less than in their lives; but they practiced human sacrifice from their very earliest period to their decadence. Among the Greeks, the legendary tales of the daughters of Erechtheus, and of Iphigeneia in mythical times; the sanctuary of Zeus Laphystius at Halos and at Lycæa, in Arcadia; the offering up of three Persians by Themistocles before the battle of Salamis, show the generality of the practice. Among the Romans, human sacrifices, in use during the Republic—either enthusiastic voluntary deeds of patriotism, or simply a kind of execution in punishment of a deadly sin—were prohibited in later times by the senate; but both Augustus and Sextus Pompeius committed wholesale murders by way of political S. to the gods. This abomination of slaughtering men in honor of God at stated periods, flourished to an awful extent among our own northern ancestors—Scandinavians and Germans, as well as among Gauls and other Celts. At Upsala, every 9th year, a great S. of expiation was offered up, consisting of 9 human beings and 63 animals. The Danes, in the same manner, held a S. every 9th year, of 99 men, besides horses, dogs, cocks, and other domestic animals (see the EDDAS; Muller, *Sagenbibliothek;* Pertz, *Mon. Germ. Hist.; Script. passim*, etc.). The German tribes, even after their conversion to Christianity, con

tinued to offer up their prisoners of war as of yore, as the Franks brought their sacrifices both to their ancient gods and to Christ. Any illness, danger, sickness—the slightest inducement, in fact, sufficed to move the Gauls toward a human holocaust, in the fashion of the worshippers of Baal and Moloch. At the death of a man, all his possessions, movable and immovable, including slaves, clients, wives, and all, were offered up to his manes: see SUTTEE. The ancient Mexicans, the negroes, and other wild tribes, were proficient in this sort of wholesale slaughter: the king of Dahomey's practices, and the fruitless remonstrances of the Brit. govt., are a well-known illustration of the firm hold that murder in honor of the Deity has of the human mind The torments and burnings of multitudes by the Inquisition, and the cruelties and massacres committed on the Jews in the middle ages, in the name of Christ, may perhaps be deemed the offspring of that Moloch or Baal worship which seems an instinct in the superstitious mind, Pagan or Christian.

SACRILEGE, n. *săk'ri-lĕj* [L. *sacrilĕgium*, sacrilege—from *sacer*, sacred; *legĕrĕ*, to gather, take unjustly: It. *sacrilegio;* F. *sacrilège*, sacrilegious]: the profanation of anything, or any place, dedicated to the service of God; popularly, the crime of stealing sacred things, particularly out of churches. SAC'RILE'GIOUS, a. *-lē'jŭs*, violating sacred things; containing sacrilege. SAC'RILE'GIOUSLY, ad. *-lĭ*. SAC'RILE'GIOUSNESS, n. *-nĕs*, the quality of being sacrilegious. SAC'RILE'GIST, n. *-jĭst*, one guilty of sacrilege.

SACRING, a. *sā'krĭng* [F. *sacrer*, to consecrate—from L. *sacer*, sacred]: in *OE.*, consecrating: N. consecration. SACRING BELL, the bell rung at the elevation of the Host in the service of High Mass—also called 'sanctus bell.'

SACRIST, n. *sā'krĭst* or *săk'rĭst* [Sp. *sacristan;* F. *sacristain;* It. *sagrista;* mid. L. *sacrista*, a sacristan—from L. *sacer*, sacred]: person employed in a cathedral to copy out music for the choir, and to take care of the books; in some cathedrals, a minor canon. SACRISTAN, n. *săk'rĭs-tan*, one who has charge of the utensils and other movables of the church; one who prepares the graves for the dead, and keeps the church clean—in some Rom. Cath. churches a clerk in minor orders. From this word is the Eng. word *sexton*. SAC'RISTY, n. *-tĭ*, an apartment in a church where the sacred utensils, vestments, etc., are kept—now often called *vestry*.

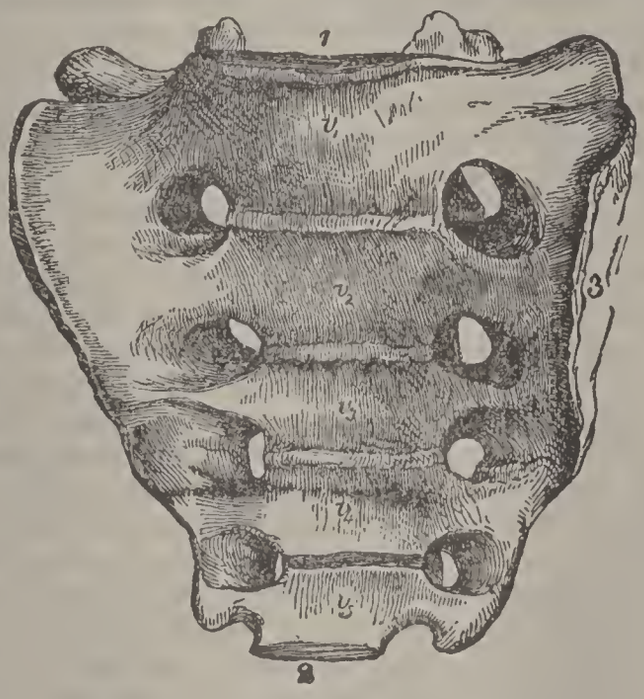
SACRO-, prefix, *sā-krō*: of or belonging to the sacrum.

SACRO BOSCO, *săk'rō bŏs'kō*, JOANNES DE (Eng. JOHN HOLYWOOD): English mathematician: d. 1244 (or 56). He entered the Univ. of Paris 1221, and afterward became prof. there. S. was one of the first doctors of the middle ages who made use of the astronomical writings of the Arabians. His treatise, *De Sphœra Mundi* (pub 1472), is merely a paraphrase of a portion of Ptolemy's *Almagest.* No book had greater renown as a manual among the scholastics: it passed through more than 20 editions—some

say 65—with as many commentaries. Other works of S. are *De Computo Ecclesiastico* and *De Algorithmo*, one of the first works on arithmetic in which the numerical notation of the Arabs is employed. About 1232 he pointed out the growing error of the Julian calendar, suggesting nearly the same correction as that applied 350 years later under Pope Gregory XIII.—He died in Paris.

SACROSANCT, a. *săk'rō-săngt* [L. *sacrosanctus*—from *sacer*, sacred, and *sanctus*, holy]: sacred and inviolable.

SACRUM, or Os Sacrum, n. *ŏs sā'krŭm* [L. *os*, a bone; *sacrum*, sacred]: in *anat.*, the part of the vertebral column connected with the pelvis. Sacral, a. *sā'kral*, relating to the sacrum.—The *Sacrum* is a triangular bone at the lower part of the vertebral column (of which it is a continuation), and wedged between the two innominate bones to form the keystone to the pelvic arch. It is readily seen to consist of five vertebræ with their bodies and processes, all consolidated into a single bone. Its anterior surface (as



Sacrum.

1, Surface articulating with last lumbar vertebra; 2, surface articulating with coccyx; 3, surface articulating with the os innominatum; v_1, v_2, v_3, v_4, v_5, the bodies of the five sacral vertebræ.

shown in the figure) is concave, not only from above downward, but also from side to side. The posterior surface is convex, and presents, in the middle vertical line, a crest, formed by the fusion of the spines of the vertebræ, of which the bone is composed. The last sacral vertebra has, however, no spine, and the termination of the vertebral canal is here very slightly protected.

Various reasons have been assigned for the peculiar name given from very olden times to this bone. One of the reasons assigned is, that it was the part used in sacrifices. Another is based on the tenet of the Jewish rabbins, that this part of the skeleton, which they called 'luz,' resisted decay, and became the germ from which the body would be raised in the last day

SACS AND FOXES, *sawks and fŏks'ĕz:* associated tribes of the great Algonquin sub-race of N. Amer. aborigines. Driven from lower Lake Huron by the Iroquois, the Sacs (or Sauks) went to the region of Green Bay, where they were joined by the Foxes, and afterward the two tribes inhabited both sides of the Mississippi river from Wis. to Mo. In the old French war they were allies of the English, and attacked Detroit 1712; and they aided the British in the Amer. revolution, and again in the war of 1812, assaulting Sandusky. A part made war under Black Hawk 1831, for possession of the Rock river region. By successive removals, a part are now the S. and F. of Missouri numbering 77, on the Kan. reservation; others, the S. and F. of Mississippi, 515, at the S. and F. agency in Oklahoma; while another portion, now numbering 397, are near Tama, Io., whither nearly as many, escaping from an inter-tribal war, returned 1857, buying over 1,000 acres, and, by vote of congress, were permitted to remain and receive there an annuity of $13,000 to $15,000. They have made little progress toward civilization. Keokuk was a great Sac chief, peaceful with his band during the Black Hawk war.

SACY, *sâ-se'*, ANTOINE ISAAC, Baron SILVESTRE DE: most eminent of French orientalists: 1758, Sep 21—1838, Feb. 21; b. Paris. After being grounded in the classics, he commenced at the age of 12 the study of Hebrew, to which, as he advanced in years, he added the other branches of Semitic—Syriac, Aramaic, Samaritan, and finally Arabic. Persian and Turkish he acquired later; but though one of the greatest masters of Arabic and Persian that ever lived, he never made much progress in Turkish. Modern European languages and jurisprudence formed collateral branches of his stupendous acquisitions. From 1781, he held various appointments under govt., chiefly in the mint. His first appearance in the world of letters dates from 1780, when he began to contribute to Eichhorn's *Repertorium.* In 1785 he was elected a member of the French Acad.; 1793, he pub. his first great work, *Annales de Mirkhond,* transl., with commentary, from the Persian. In 1792 he retired from govt. service to pursue his favorite studies; in 1795 he was appointed to a chair in the École des Langues Orientales; but refusing to take the oath of hatred against royalty, he resigned from both institute and school, yet seems to have been allowed to teach; and 1803, when the institute was reorganized, he took his seat there again; and soon was nominated prof. of Persian at the Collége de France. Meanwhile, he had employed his seclusion to complete his knowledge of Arabic, and with such thoroughness that he originated the true modern Arabic scholarship. In 1808 he became a member of the corps législatif, and was subsequently attached to the commission and council of public instruction. In 1822, he was made administrator of the Collége de France and the École Spéciale des Langues Orientales; and in the same year he founded, with Abel Rémusat, the Société Asiatique. Under the Orleans govt., to which he soon attached himself, he was nominated perpetual sec. of the Académie des In-

scriptions. Yet his numerous public duties never led him to relax in the least his studies; and the number of his essays, memoirs, pamphlets, papers, etc., besides his larger works, is prodigious. He died, full of years and honors. The Acad. had a medal struck in his honor, and his bust was placed in the library of the Institute. Oriental studies owe to him more than to any other orientalist of our age: irrespective of his own brilliant labors, he furthered his favorite science in every possible way—founding, or causing to be founded, oriental chairs in France; and gathering such disciples as Freitag, Kosegarten, Rasmussen Chézy, Quatremère, Jaubert, Saint-Martin, and many others.

Among his works is *Grammaire Arabe*, the most classical work of its kind, and which has given Arabic studies a new impulse, forming the turning-point between the ancient and modern oriental philology. Next stands *Chrestomathie Arabe*, with *Anthologie Grammaticale Arabe*. Among his other writings are *Mémoires sur Diverses Antiquités de la Perse;* transl. of Abdollatis's *Egypt*, with notes; editions of *Calila ve-Dimnah;* of the *Pendnâmeh*, with Fr. transl.; the *Makamat* of Hariri; *Mémoires sur l'État Actuel des Samaritains; Exposé de la Religion des Druses;* and manifold contributions (more than 400) to the *Magasin Encyclopédique, Mémoires de l'Institut, Recueil de l'Académie des Inscriptions, Fundgruben des Orients, Annales des Voyages, Journal de la Société Asiatique, Biographie Universelle*, and Eichhorn's *Reportorium für biblische und orientalische Literatur, Revue des Deux Mondes*, etc.

SACY', Samuel Ustazade Silvestre de: journalist: 1801–1879, Feb.; son of Baron Silvestre de S. From 1828 he was attached to the staff of the *Journal des Débats*. It is supposed that, not omitting to take part in almost every public question, he wrote about two-thirds of the political articles in that paper, 1828–52. From 1852, when the empire was re-established, he relinquished politics, and became the principal reviewer of the paper. In 1848 he was appointed administrator of the Mazarin Library; 1854 was elected a member of the Acad.; 1864 became a member of the council of education; in 1867 of the senate. In 1858 he pub. a collection of his literary articles (*Variétés Littéraires, Morales, et Historiques*, 2 vols.). He edited a number of religious works; and 1861–64 an ed. of the Letters of Madame de Sévigné, 11 volumes.

SAD, a. *săd* [W. *sad*, wise, sober: Low Ger. *sade*, rest, quiet—from *setten*, to set or fix: Dan. *sat*, sedate: comp. Gael. *saod*, care, attention]: sorrowful; melancholy; gloomy; depressed by grief or affliction; calamitous, as an event; as a word of burlesque or familiar complaint, inconvenient; vexatious; bad; in *OE.*, serious; grave; attentive; cohesive; of a sombre dark shade. Sad'der, comp. *-ẽr*, more sad. Sad'dest, superl. *-ĕst*, most sad. Sad'ly, ad. *-lĭ*. Sad'ness, n. *-nĕs*, the state or quality of being sad; heaviness; sorrowfulness. Sad-iron, a smoothing-iron, so named from its weight, now termed a flat-iron. Sad-bread, in

OE., heavy, imperfectly baked, and brown bread.—Syn. of 'sad': melancholy; mournful; dejected; moody; sorrowful; grievous; cheerless; depressed; serious; sedate; downcast; calamitous; grave; afflictive; grievous; heavy.

SADALMELIC, n. *sa'dăl-mā-lĭk* [corrupted Arabic, the king's lucky star]: the chief star of the constellation Aquarius; called also a Aquarii.

SADDA: see Sadder.

SADDEN, v. *săd'n* [from Sad, which see]: to make sad or sorrowful; to become sad. Saddening, imp. *săd'nĭng:* N. in *dyeing*, method of applying certain mordants to cause them to produce darker or duller shades. Saddened, pp. *săd'nd.*

SADDER, n. *săd'dĕr*, or Sad'da, n. *-dă* [Per. *saddar*, the hundred gates or ways—from *sad*, a hundred; *dar*, a gate, a way]: a summary or abridgment of the Zend-Avesta or sacred books of the anc. Persians, in modern Persian.

SADDLE, n. *săd'l* [Dut. *zadel;* Ger. *sattel*, a saddle: L. *sedīlē*, a seat—from *sedĕrĕ*, to sit]: seat placed on the horse's back, for the rider: it consists of the wooden frame or *saddle-tree*, the *skirts* or padded *under-flaps*, the *upper-flaps* and *seat* (usually of tanned pig-skin), the *girth* or *belly-band*, the *stirrup-straps*, the *stirrups*, and the *crupper-loop*. A racing saddle may weigh not more than two or three lbs.; a cavalry saddle is about four times as heavy.—Among *seamen*, saddle is a block of wood nailed on the lower yard-arms: V. to put a saddle on; to load; to burden. Sad'dling, imp. *-lĭng*. Sad'dled, pp. *-ld*. Sad'dler, n. *-lĕr*, one who makes or sells saddles. Sad'dlery, n. *-ĭ*, materials for saddles; articles sold by saddlers Saddle of mutton, of venison, etc., two loins of mutton, venison, etc., cut together. Saddle-back, in *geol.*, a familiar term for anticlinal strata, from their sloping or dipping right and left in saddle form; a hill constituting a ridge. Saddle-backed, a. shaped like a saddle. Saddle-bags, two bags of leather united by straps to be thrown across the horse's back, one hanging on each side. Saddle-bow, the pieces which form the arched form of a saddle. Saddle-cloth, a cloth under a saddle, and extending behind it. Saddle-girth, the band or girth which passes under the horse's belly to fasten the saddle. Saddle horse, a horse suitable for riding, or trained for it (see Horsemanship). Saddle-shaped, a. in *bot.*, bending down at the sides so that a rounded form is given to the upper part. Saddle-tree, the framework of a saddle. To put the saddle on the right horse, to impute blame where it is really deserved. Well or Firm in the saddle, firmly seated or settled.

SAD'DLEBACK: well-known mt. in Cumberland, England, 4½ m. n.e. of Keswick, 2,787 ft. high.—**The name is given to several mts. in the United States.**

SAD'DLEROCK OYSTER: named from Saddlerock reef, Norwalk Harbor, Conn., the original source of supply; a large kind of cultivated oyster in great demand at New York and other markets.

SADDUCEES, n. *săd'dū-sēz:* party or school among the ancient Jews who denied the resurrection of the dead, or the existence of angels or spirits, and who adhered to the written law alone. The *Sadducees* were a school or party—not a 'sect,' as they have been generally denominated since Josephus—of the times subsequent to the Syrian wars; and often mentioned in the New Test., the Talmud, and the Midrash. Their origin, as well as their name, has given rise to many speculations, but none satisfactory. Some investigators have derived the name from Zadok, righteous man, a denomination which the Sadducees are supposed to have assumed in contradistinction from the Pharisees, the Separatists, as designating their own rejection of all superfluous and exaggerated religious practices, and their stand upon the words of the law itself. (For their tenets, as contrasted with those of the Pharisees, see that title.) Other writers, and with more probability, derive their name from Zadok, chief of the priesthood in the days of David and Solomon.

It was a misconceived notion of some church Fathers, that the Sadducees rejected all the canonical books of the Old Testament except the Pentateuch. They held the whole Old Testament as sacred as the Pharisees, quoting from all its parts in support of their views. Otherwise they would not have remained in the Sanhedrim, their members would not have been high-priests, and the Pharisees would not have fought against them with casuistry about trifles. But, on the other hand, their sober, but cold and lifeless rationalism, could not—apart from their aristocratic tendencies—while the immense struggle for liberty was still fresh in the people's minds, gain for them that popular sympathy which the Pharisees—eager, jealous, patriotic, pious, learned men of the people, enthusiastic men of progress—easily acquired and held. The Sadducees were largely easy men of the world, indifferent to, and insensible of, spiritual truth. Their theological views had in large part a basis in their political aims which looked toward re-establishing the Israelitish nationality; while the Pharisees taught the people to endure patiently till their kingdom should be restored in the Resurrection. Thus Sadduceeism, of which we hear so much in the New Testament—and against which as 'the leaven of Herod,' Christ cautioned his disciples, while he denounces, as does the Talmud, only the hypocrites among the Pharisees—died out soon after the 1st c. The term under which they are once mentioned in the Mishna, viz., Karaim, became later the name of a Jewish sect, still in existence, who reject all tradition, holding the Written Law as their sole guide. It is not impossible that the original book of Ecclesiastes was written by a Sadducee. In the era of the Talmud the differences between the Pharisees and the Sadducees were purely scholastic and in due time the Sadducees adopted Pharisee practices.

SADH, n. *sâd*, or SAADH, n. *sâ'ad* [Hind. *sadha*, pure or puritan]: a Hindu religious sect founded 1658, by a

man called Birbhan. They believe in one God, who alone is to be worshipped. They teach a pure morality. Their numbers are few, and are found chiefly in Furruckabad, Delhi, Mirzapore, in India.

SADI, *sâ'dē*, MUSLIH-UDDIN (correctly MUSHARRIF-UDDIN B. MUSLIH-UDDIN): greatest didactic Persian poet: about 1184-1292 (or 1291, Dec.); b. Shiraz, Persia; son of Abdallah; descendant of Ali, Mohammed's son-in-law. Notwithstanding his noble lineage, his father held but an insignificant position. Sâdi received his education in science and Mohammedan theology at Bagdad, whence he undertook, with his master, his first pilgrimage to Mecca; which he subsequently repeated 14 times. He traveled many years, and is said to have visited parts of Europe, Barbary, Abyssinia, Egypt, Syria, Palestine, Armenia, Asia Minor, Arabia, Persia, Tartary, Afghanistan, and India. Near Jerusalem, 'where,' he says, 'I associated with the brutes,' he was taken prisoner by the Crusaders, not while fighting, but while practicing religious austerities in the desert. He was ransomed for ten dinars by a merchant of Aleppo, who recognized him, and gave him his daughter in marriage; this union, however, did not prove happy. He married a second time, and lost his only son from that marriage. The latter part of his life Sâdi spent in retirement near his native town, and he died, according to the best authorities, at the age of nearly 110 years.—His was a contemplative, pious, and philosophical disposition. Criticism in the modern western world can scarcely assent to all the praises of Sâdi from his own countrymen; yet doubtless this 'nightingale of thousand songs' has a place among the foremost masters of poetry; and the honors showered on him by princes and nobles were merited. A magnificent mausoleum, with mosque and college attached, was erected in his honor at the gate of Shiraz; and thither the people flocked in pilgrimage.

The catalogue of his works comprises 22 different kinds of writings in prose and verse, in Arabic and in Persian, of which *ghazels* and *kassidas* (odes, dirges) form the predominant part. The most celebrated and finished of his works is the *Gulistan*, or Rose-garden, a kind of moral work in prose and verse, consisting of eight chapters, on Kings, Dervishes, Contentment, Taciturnity, Love and Youth, Decrepitude and Old Age, Education, and the Duties of Society, the whole intermixed with stories, maxims, philosophical sentences, puns, and the like. Next to this stands the *Bostan*, or Tree-garden, somewhat similar to the *Gulistan*, but in verse, and more religious. Third in rank stands the *Pend-Nameh*, or Book of Instructions. Elegance and simplicity of style and diction form the chief charm of Sâdi's writings. In wit, he is not inferior to Horace, with whose writings he, according to one source, may have been acquainted, since he is said to have known Latin. The first complete edition of his works called the *Salt-cellar of Poets*, by Harrington, was pub-

lished Calcutta 1791-95. The *Gulistan*, first edition with Latin translation by Gentius (Amst. 1651), has been reprinted frequently, and translated into European tongues, into English chiefly by Gladwin, Ross, and Eastwick. The *Bostan* likewise has been translated.

SADO, *sâ'do:* island, a few m. w. of and belonging to Japan. It is of irregular form, about 40 m. long and averaging 8 m. in width; and has a poor soil, which is but slightly cultivated. Mining of gold, silver, copper, and lead is the principal industry. Ore is found in vast quantities, but is of only moderate quality. Pop. about 125,000.

SADOLETO, *sâ-dō-lā'tō,* JACOPO: Italian theologian: b. Modena 1477; d. Rome, 1547, Oct. 18. He was consecrated bishop of Carpentras, near Avignon, in 1517; belonged to the Contarini Reform Party, and was a member of the commission appointed by Paul III. to take steps toward effecting a church reformation. He immediately opened a correspondence with Erasmus, Bucer, Sturm, and Melanchthon, but when in 1539 he invited the Genevans to return to the Roman Catholic Church, he received a harsh rebuff from Calvin. After that he confined himself largely to his own diocese. He had been appointed cardinal in 1536, but while he was frequently summoned to Rome he preferred Carpentras and his study well stocked with books of the new learning, in which he was an adept, being one of the best Latinists of his day. He wrote commentaries on the Psalms, and on the Epistles of Saint Paul, and so excellent was their style that Erasmus made the somewhat invidious remark that 'their very polish of expression will take off the edge of their pious suggestiveness.' His works were published in four volumes in 1734. He was a diplomat in whom successive popes had confidence and acted as ambassador to Francis I. in the interests of peace in 1544.

SADOWA, *sâ-dō'vâ,* BATTLE OF: the decisive engagement of the war between Prussia and Austria; known also as the battle of Königgrätz; at the village of Sadowa, on the Bistritz river, in the n. part of Bohemia, Austria, 58 m. from Prague, 1866, July 3. Having crossed the mountains in two divisions, the Prussians were united in Bohemia under King William I. This army consisted of about 230,000 men with about 800 guns. The Austrian force, of about 185,000 men with nearly 800 guns, was led by Marshal Benedek. The battle raged from about 7 A.M. till nearly 4 P.M. The Austrians were completely routed. They lost 40,000 killed and wounded, 20,000 prisoners, and 174 guns, while the Prussians lost only about 10,000 men. It is claimed that this overwhelming victory was due to the fact that the Prussians were armed with the needle-gun, and the Austrians used the ordinary musket. Among the results of this battle were the unification of N. Germany, the securing of an independent legislature for Hungary, and the possession of Venetia by Italy. See GERMANY.

SADR, n. *săd'r:* the name given by the Arabs of Barbary to the lote-bush, *Zizyphus Lotus,* whose berries they use as food.

SÆMUND, *sā'mônd,* THE WISE: Icelandic scholar: b. Iceland, about 1155; d. Oddi, 1233. He undertook a course of foreign travel in pursuit of learning, and visited Paris and Rome; then, returning to Iceland, he became priest at Oddi (1176). He was unknown to scholars till about 1643, when the newly discovered *Elder Edda* and other writings were falsely ascribed to him.

SAFE, a. *sāf* [F. *sauf*—from L. *salvus,* safe: It. *salvo*]: free from danger or risk; secure; no longer dangerous; placed beyond the power of doing harm; certain; sure: N. a box or press, generally detached, and hung on a wall, usually covered with wire-cloth or perforated zinc, in which meats may be kept cool; a fireproof chest or closet for containing money, valuable documents, and the like: V. in *OE.,* to render safe; to bring security to. SAFE'LY, ad. *-lĭ,* in a safe manner; securely; without danger or hurt. SAFE'NESS, n. *-nĕs,* or SAFE'TY, n. *-tĭ,* the condition of being safe; freedom from harm or danger; preservation; custody; the state of making safe or secure. SAFE-CONDUCT [F. *sauf-conduit*]: passport granted, on honor, to a foe, for purposes of conference, etc., enabling him to pass where it would otherwise be impossible for him to go with impunity. To violate the provisions of such a pass has always been abhorred as a breach of the laws of honor. SAFE-KEEPING, the act of keeping or preserving in safety. SAFETY-ARCH, an arch formed in a wall, as over a door or window. SAFETY-BELT, a belt constructed of some light material, or capable of being inflated with air, for enabling a person to float in water; a life-preserver. SAFETY-BUOY, an article constructed of very light material, generally in the form of a circle, to be thrown into water to enable persons to float till they are rescued. SAFETY-CAGE, n. a hoisting and lowering chamber for mines, having guards which arrest the descent if the rope break or overwind (see MINING). SAFETY-FUSE, fuse employed to prevent premature explosions in blasting operations. SAFETY-LAMP, a lamp covered with wire-gauze for use in mines (see below). SAFETY-PAPER, n. a paper chemically or mechanically prepared, so that its color or texture will be changed by being tampered with. SAFETY-PIN, n. a pin having its point fitting into a kind of sheath. SAFETY-PLUG, a plug of fusible metal placed in an orifice in a steam-boiler, so that should the temperature of its fusing-point be reached, danger is lessened by its melting and letting out water and steam. SAFETY-VALVE, valve in the boiler of a steam-engine which opens when the pressure within becomes too great for safety (see below).

SAFEGUARD, n. *sāf'gârd* [*safe,* and *guard*]: a convoy or guard to protect a traveler, or a party, in times of war or danger; that which secures safety; defense; protection: V. to convoy or protect; to make secure. SAFE'GUARDING, imp. SAFE'GUARDED, pp.

SAFES.

SAFES: receptacles for protecting against fire or theft valuables, such as money, jewels, documents, etc. Our forefathers used oaken chests secured with iron straps and studs for similar purposes. Such a chest formerly contained the crown-jewels of Scotland, and is still exhibited in Edinburgh Castle. Subsequently, iron chests made simply of stout cast or wrought iron were used. The foundation of the plan on which fire-proof safes are still constructed was laid by Richard Scott of England 1801. William Marr of London was the first to patent and make public a method of construction 1834. He filled the space between the inner and outer cases with sheets of mica, attached to paper, and crowded powdered charcoal and burnt clay about the sheets after they had been properly placed. Charles Chubb, London, began using concentric linings of iron plates, with baked wood ashes between, 1838. Mr. Thomas Milner 1840 patented a fire-proof safe improving on these principles. In 1843 letters patent were granted to Messrs. Tann for a mixture of pounded alum and gypsum, previously heated and cooled, as a fire-resisting medium placed between the two plates of iron, three to six inches apart, which together form the wall of the safe. Milner's plan was to fill the jacket formed by the double-plated sides with sawdust, in which were packed a number of small tubes filled with an alkaline solution, and hermetically sealed, or crystals of alum or soda, containing 40 to 60 per cent. of water of crystallization. In case of fire, and the safe becoming heated, the tubes burst, or the crystals melt, and saturate the sawdust with water, which becomes steam, and passes into the inner chamber of the safe, and thus protects the contents, if inflammable, from fire for a considerable time. Fire-proof safes are still made on the same principle. Messrs. Chubb use a mixture of alum and a mineral substance which they procure from abroad. Many of the safes now made are rooms rather than boxes.

In the United States the late James Conner, type-founder, New York, is credited with having made the first fire-proof safe, bet. 1829 and 32. He made a strong box of iron, filled the sides with plaster of Paris, and used it in his office several years. In 1843 the Fitzgerald safe appeared. Conner claimed priority of invention, backed with his original device, but the courts recognized Fitzgerald as the patentee, on the ground that Conner had never made his invention known. Since then there have been innumerable improvements of this indispensable article, till now there are safes as large as a modern sized bedroom, and others diminutive in size, both extremes representing the perfection of inventive skill. After providing a safe reasonably fire-proof, inventors applied themselves to making it burglar-proof as well; and this compound necessity of the business-world has resulted in some of the most marvellous and beautiful creations of mechanical study and skill. Safes that would withstand the heat of an ordinary fire had to be specially strengthened in their exterior parts to resist the drills and

scientific implements of the professional thief; and associated with this task was that of providing adequate locks. The highest perfection in a fire-proof and burglar-proof door yet reached is seen on the inside of the massive doors recently attached to the great safes of the U. S. sub-treasury in New York; yet so skilful are the manufacturers of burglars' tools that these locks—marvels of tongues, bars, and bolts, controlled by a single small time-lock knob, are supplemented by a labyrinth of electrical wires and a perpetual armed guard. See LOCK.

Probably every city, and nearly every town of importance, in the United States have now one or more *safe-deposit* companies, in whose fire and burglar-proof vaults small pieces of extra valuable property may be stored for any length of time on payment of graduated rentals. The vaults are surrounded by all the elements of security known to human ingenuity, and the safes and boxes of various sizes within them, which are offered for rent, are so guarded by special locks and doors, and subjected to such strict rules, that no one person can gain access to their contents, even legitimately, without the aid of several officers, each having a special branch of the general protection in his charge. The first corporation organized in the United States for the sole purpose of keeping valuables and securities, and renting fire and burglar-proof vaults, was the Safe Deposit Co. of New York, chartered 1861, Apr. 15. Prior to the provision of these special vaults, the only means of preserving extra valuable property was to deposit it in the safe of a bank, or of some large business concern; but such depositaries were only accessible to persons having intimate relations with banks, and then only as special favors. Receptacles in safe deposit vaults rent from $5 per annum upward, to a large sum, according to size. Renters are allowed access to them at all proper hours, under surveillance of an officer; and accomodations are provided in private rooms for renters to examine their property, or to increase or decrease their securities without being observed. Many of the larger banks have such safe-deposit vaults attached to them.

SAFE'TY-LAMP: lamp, with provision against explosive gases; for use in mines. When marsh-gas or light carburetted hydrogen, frequently disengaged in large quantities from coal in mines, is mixed with seven or eight times its volume of atmospheric air, it becomes highly explosive, taking fire at the approach of a light, and burning with a pale blue flame. Moreover, this gas in exploding renders ten times its bulk of atmospheric air unfit for respiration, and the *chokedamp* thus produced is often as fatal to miners as the primary explosion. Sir Humphrey Davy, investigating the subject of flame, discovered that when two vessels filled with a gaseous explosive mixture are connected by a narrow tube, and the contents of one are fired, the flame is not communicated to the other, provided the diameter of the tube, its length, and the conducting power for heat of its material, bear certain proportions to each other; the flame being extin-

guished by cooling, and its transmission rendered impossible. In this experiment, high conducting power and diminished diameter compensate for diminution in length; and to such an extent may the length be reduced, that metallic gauze, which may be looked upon as a series of very short square tubes arranged side by side, completely arrests the passage of flame in explosive mixtures; and this forms the protection in the S.-L. The following are Davy's directions regarding the structure of his lamp: 'The apertures in the gauze should not be more than $\frac{1}{22}$ of an inch square. As the fire-damp is not influenced by ignited wire, the thickness of the wire is not of importance; but wire from $\frac{1}{40}$ to $\frac{1}{60}$ of an inch in diameter is the most convenient. Iron-wire and brass-wire gauze, of the required degree of fineness, are made for sieves by all wire-workers; but iron-wire gauze is to be preferred: when of the proper degree of thickness, it can neither melt nor burn; and the coat of black rust which soon forms upon it superficially defends the interior from the action of the air. The cage or cylinder should be made of double joinings, the gauze being folded over so as to leave no apertures. When it is cylindrical, it should not be more than two inches in diameter; for, in larger cylinders, the combustion of the fire-damp renders the top inconveniently hot, and a double top is always a proper precaution, fixed at the distance of half or three-quarters of an inch above the first top. The gauze cylinder should be fastened to the lamp by a screw of four or five turns, and fitted to the screw by a tight ring. All joinings should be made with hard solder; and the security depends upon the circumstance that no aperture exists in the apparatus larger than in the wire gauze.' The cylinder is protected by three external, strong, upright wires, which meet at the top; and to their point of junction a ring is attached, by which the lamp is suspended. The oil is supplied to the interior by the pipe projecting from the right side of the figure, and the wick is trimmed by a wire bent at the upper end, and passed through the bottom of the lamp, so that the gauze need not be removed for this process. (The wire is shown in the figure.) When a lighted lamp of this kind is introduced into an explosive mixture of air and fire-damp, the flame is seen gradually to enlarge as the proportion of light carburetted hydrogen increases, until at length it fills the entire gauze cylinder. Whenever this pale enlarged flame is seen, the miners should depart to a place of safety, for though no explosion can occur while the gauze is sound, yet at that high temperature the metal becomes rapidly oxidized, and might easily break; and a single aperture of sufficient size would then occasion a destructive explosion. In a strong current of air, the heated gas may be blown through the apertures

Safety-lamp.

of the gauze before its temperature is sufficiently reduced to prevent an explosion; but such a contingency may be guarded against by placing a screen between the draught and the lamp. In 1815 Sir Humphry Davy presented his first communication to the Royal Soc. respecting his discovery of the safety-lamp; and at the meeting 1816, Jan. 11, the S.-L. was exhibited. Sir Humphry Davy's claim as original discoverer was immediately challenged by various persons, especially Dr. Reid Clanny of Newcastle, and the great engineer, George Stephenson. Clanny's S.-L. (see *Philosophical Transactions*, 1813) was based on the principle of forcing in air through water by bellows; but the machine was ponderous and complicated, and required a boy to work it; moreover, he had been anticipated by Humboldt 1796 (Weld's *History of the Royal Society*, II. 288, note). As to Stephenson, notwithstanding a report of the Royal Soc. 1817, Nov. 20, totally adverse to his claims, there is undoubted evidence that, during the very months Davy was at work on the experiments which led to his invention, Stephenson's (familiarly called the *Geordy*) lamp was actually in use at the Killingworth mines. In its general principle it was the same as Davy's, the main difference being that the Stephenson lamp had a glass cylinder inside the wire-gauze cylinder, and that inside the top of the glass-cylinder was a perforated metallic chimney; the air being supplied through a triple circle of small holes in the bottom. On the subject of this controversy, see Smiles's *Life of George Stephenson*.—It has been generally agreed that there is a decided advantage in having a glass cylinder besides the gauze one, to resist strong currents of air; and that glass without gauze is not safe from fracture. In the French and Belgian collieries, Mueseler's lamp is in almost universal use. It consists of a glass cylinder immediately around the flame, and of wire gauze above. An internal metal chimney opening a short distance above the flame creates a strong upward draught, which causes the feed air to pass briskly down from the wire gauze, and so keeps the glass cool and insures thorough combustion. Mueseler's lamp is also used in a few English collieries; but modifications of Davy's and Stephenson's are still in general use in England.

Under a British act of 1887, the use of the old unbonneted forms was stopped, and a choice from the many new designs became necessary. Among these the Hepplewhite Gray and the Howat Deflector have been preferred, while the Mueseler, the Morgan, and the Marsaut have obtained a good name. The Hepplewhite Gray is preferred by deputies, firemen, and timberers, because of the large amount of light given by it, its deflection of the light toward the roof by its conical glass, and its power to detect small quantities of gas, in which it is superior to all others. The chief peculiarity of this lamp, and one in which it differs from all others, is the admission of the feed-air from the top, down inlet tubes, three or four, and then through an annular chamber immediately above the oil-vessel. The only gauze used is that covering the outlet

and the annular inlet chamber. The projecting top of the lamp so protects the inlet tubes that it is impossible for a current to rush down them. Numerous experiments have proved the safety of this lamp in currents of high velocity.

For the ordinary miner, the Deflector has given by far the best results. It will continue to burn even where the unbonneted varieties will not, and the light given in impure air is superior to that obtained from any other form. Its indication of gas is exceeded only by the Gray and the Mueseler. The miners like it above every other, because it gives a good light for a long time, burns brightly in slow and impure currents, and can bear much knocking about. This lamp has a peculiar arrangement for heating the inlet air and deflecting the current onto the flame, securing the use of all the air and in a heated state, which causes it to burn in air so impure that all ordinary forms, even unbonneted ones, go out at once.

The Mueseler lamp ranks next to the Gray as a detector of gas. It is one of the safest of all lamps, from the double shield employed. The Morgan detects gas well, burns well in a good current of air, and does not become hot; but both this and the Mueseler burn badly in 'dampy' or slow currents.

Closely connected in its objects with the safety-lamp is an ingenious invention patented by Mr. Ansell of the British mint, for determining, by a simple application of the law of osmotic force, the presence of light carburetted hydrogen in coal mines. Of two or three forms of apparatus, the following is the most simple: A thin india-rubber ball filled with atmospheric air is placed on a stand under a lever which slightly presses its upper surface. This lever is connected with a spring, which it liberates when, from any cause, the lever is raised; and the liberation of the spring sets a bell in vibration. If this trap for the discovery of fire-damp is set where that gas is present to any material extent, the noxious gas enters the ball by virtue of osmose, causes it to swell, and when the swelling has attained a certain point, the warning bell rings.

Electric Light (q.v.) has recently been introduced into mining. The obstacle has been the lack of facility for economically dividing the light from one electric source into many comparatively small lights. As it burns *in vacuo*, it can be rendered perfectly safe in an explosive mixture of fire-damp and air. There have been several inventions; in one of which (by Dumas and Benoit) the light is produced by a current from a Ruhmkorff coil passing through a Geissler's vacuum tube: the tube, however, really contains a highly rarefied gas, such as carbonic acid, and the light is only a rich phosphorescent glow. Some collieries have recently been lighted with electric lamps on Swan's principle.

SAFE'TY-VALVE: circular valve on an opening in the top of a steam-boiler, and kept in place by weights piled above it, or by a lever of the second kind with a weight capable of sliding along the arm, or by a lever and spring. In stationary engines, one valve is frequently sufficient, and the retaining of the valve in place is by the first or second

of the methods above. In locomotive engines, there are two loaded valves: one, called the *lock-up valve*, from its being out of the engineman's reach and control, is placed far forward on the top of the boiler, and kept down by weights; the other on the hinder part of the top of the boiler, is for safety subjected to a less pressure than the lock-up valve, and is acted on by a lever and spring. Whenever the tension of the steam rises above a certain amount (=the weight in lbs. with which the valve is held down divided by the area in inches of the undersurface exposed to the steam), the valve is forced upward by the greater pressure beneath, steam escapes, till the pressure on the boiler having been thus relieved, the valve sinks to its place. The only precaution necessary is to be sure that the valves are not too heavily loaded or fastened either through neglect, or in wilful risk for the sake of speed.

SAFFI, *sâf'fē*, or AZAFFI, *â-zâf'fē*, or ASFI, *âs'fē*: seaport of n. Africa, kingdom of Morocco, 107 m. w.n.w. of the city of Morocco. It is surrounded by waste and desert land; and its inhabitants are said to be the wildest, greediest, and most fanatical of the kingdom. It was at one time the chief seat of the trade with Europe, and though it has declined with the rise of Mogadore, it still exports silk, wool, leather, gum, and goatskins. Pop. about 12,000, of whom 3,000 are Jews.

SAFFIAN, n. *săf'fi-an* [Rus.]: a dyed leather made at Astrakhan and other parts of Asiatic Russia. It is principally prepared from goatskins, and the colors used are red and yellow.

SAFFLOWER, n. *săf'flow-r* [from Eng. *saffron*, and *flower*], (*Carthamus tinctorius*): plant resembling saffron, of nat. order *Compositæ*, allied to Thistles (q.v.), but distinguished by its heads of flowers having only hermaphrodite florets, and the fruit having four ribs, and no pappus. It is an annual, cultivated in American country gardens, and is 1–3 ft. high, branching toward the top; flowers dark orange, or vermilion. It is a native of the E. Indies, from which it was introduced probably in a remote age into Egypt and the Levant, where it is now naturalized. It is cultivated largely in France, and s. Europe, and in parts of S. America, chiefly for the corollas of the florets used in dyeing yellow and red. In France, the flowers are picked by the hand in dry weather, and very carefully dried on a kiln under pressure, which forms them into small round cakes. The s. of Persia is generally esteemed the best; but India exports a large quantity. From its resemblance to saffron, S. is sometimes called *Bastard Saffron*, and used to adulterate saffron. The yellow coloring matter of S. is a kind of extractive. The red coloring matter is Carthamine (q.v.). The coloring matter of Rouge

Safflower (*Carthamus tinctorius*).

(q.v.) is from S.—The seeds of S. are bitter and very oily: they are greedily eaten by parrots and many other birds. They are sometimes used as a purgative. The oil from them is employed in the E. Indies in rheumatism and paralysis.

SAFFORD, *săf'ĕrd*, TRUMAN HENRY, PH.D.: astronomer: b. Royalston, Vt., 1836, Jan. 6. His mathematical powers in childhood were phenomenal. At an early age, he could perform such mental exercises as extracting the square root to 10 places of figures. At 14 years, he calculated the orbit of a comet. He graduated at Harvard 1854, and studied in the observatory, of which he was for a time director. 1865–71, he was prof. of astron. in Chicago Univ. and director of Dearborn Observatory; later, astronomer of the U. S. engineers in territorial surveys; and from 1876, prof. of astron. in Williams College. His publications have been chiefly important catalogues of stars, and papers in scientific journals. Died 1901, June 13.

SAFFRENE, n. *săf'rēn* [F. *safran*, saffron]; in *chem.*, $C_{10}H_{16}$. One of the constituents of sassafras oil. It boils at 155°–157°, has a sp. gr. of 0·834, and deflects the ray of polarized light to the right.

SAFFRON, n. *săf'rŏn* [F. *safran*—from It. *zafferno*—from Ar. *za'faran*, saffron]: dried stigmata of the plant *Crocus satīvus*, ord. *Irĭdācĕæ*, which have fine deep-orange color; the stigmata *C. autumnālis* and *C. odōrus* also supply saffron: ADJ. having the color of saffron flowers; yellow.—*Saffron* is a coloring material from one species of yellow crocus, was introduced into Europe from Asia Minor, and is largely produced in several countries, but chiefly in Spain. In England, the crocus is mentioned in the 10th c., but afterward disappeared from w. Europe till 1339, when it was introduced from the East by a pilgrim; and 1582 it was extensively cultivated for yielding S., especially in Essex, at the place now called Saffron-Walden. Its cultivation in Britain for this product has almost entirely ceased, and the S. used is imported. S. from very early ages had great medicinal reputation: Homer mentions it; and in Canticles iv. 14, it is associated with spikenard and other precious drugs and spices. A large portion of the supply in ancient times was yielded by Cashmere, where it is still extensively cultivated. It is used also as a perfume, and in flavoring and coloring confectionery and other articles of food, which are now its chief uses in western countries, where its medicinal use has nearly ceased.—The color yielded by S. is a bright golden yellow, due to a peculiar principle called *Polychroite*. Its great solubility in water prevents its being used as a dye for fabrics; but its agreeable flavor, and the absence of all

Saffron (*Crocus Sativus*).

injurious qualities, render it of great service in coloring articles of food.

The *S. Crocus* (*Crocus sativus:* see CROCUS) differs from most of the species of that genus in flowering in autumn, not in spring. It has large deep purple or violet flowers, with the throat bearded, and the long drooping trifid stigma much protruded from the tube of the perianth. The stigmas are the only valuable part of the plant. In its cultivation, the corms are planted in the beginning of summer in rows six inches apart, and three inches from bulb to bulb; the most suitable soil being a sandy loam, thoroughly tilled. The stigmas are gathered and spread on cloth or paper, and dried in the sun, or in kilns or drying houses. The produce of an acre of S. is about 5 lbs the first year, and 24 lbs. the second and third years, after which the plantation must be renewed.—The vari-colored Spring Crocus (*C. vernus*) and its yellow varieties, *luteus* and *Susianus*, have short, dilated, jagged stigmas.

SAFFRON-WALDEN, *săf'rŏn-wawl'dĕn:* market-town and municipal borough of England, county of Essex, 24 m. n.n.w. of Chelmsford, 44 m. n.n.e. of London. The Church of St. Mary the Virgin, dating from the time of Henry VII., is an elegant specimen of late Perpendicular. The chief trade is in barley, malt, and cattle. The town took its name from the former culture of Saffron (q.v.) in its vicinity. Pop. 6,000.

SAFRANIN, n. *săf'ra-nĭn* [F. *safran*, saffron]: in *chem.*, saffron yellow; polychroite; the yellow coloring-matter of saffron, obtained as an inodorous powder, soluble in water and alcohol, almost insoluble in ether. It is colored blue by sulphuric acid, green by nitric acid, and dark brown by hydrochloric acid.

SAG, v. *săg* [Scot. *seg*, to sink, as liquids in a cask from absorption: Gael. *sug*, to imbibe; *sugh*, to drain, to dry up: Sw. *sacka*, to settle, sink: Ger. *sacken*, to sink]: to sink gradually down; to become depressed; to hang heavy; to incline from an upright position; to cause to bend or give way. SAG'GING, imp.: ADJ. bending or sinking underneath a weight. SAGGED, pp. *săgd:* ADJ. overloaded. To SAG TO LEEWARD, in *nav.*, to make a considerable leeway.

SAGA, n. *sä'ga* [Icel. *saga*]: one of the group of anc. heroic tales and myths of the races of northern Europe. Saga is an old Norse word used to denote a tale which, originally dependent on, and gradually elaborated by, oral tradition, had at last acquired definite form in literature. Such sagas (Norse *Sögur*), with poetical and legislative writings, are the chief part of the old Norwegian-Icelandic literature. They have been divided into historical and legendary. The latter embrace partly stories universally current about heroes of the Teutonic race (e.g., the *Völsunga-Saga*), and partly stories peculiar to the Norse or Scandinavian peoples (e.g., the *Frithjofs-Saga*); while the former deal with the events and personages of Norwegian and Icelandic history from the 9th to the 13 c., in numerous biographies and family records. To Danish

history belong the *Knytlinga-Saga* and *Jomsvikinga-Saga;* to Swedish, the *Ingvars-Saga;* to Russian, the *Eymunds-Saga.* The Faröe Islanders and the Orcadians also have their own sagas. After the middle of the 14th c., when the motley literature of the church began to exercise an influence, tales were translated from foreign languages into Norse, e.g., the story of *Barlaam and Josaphat* (q.v.), which also received the name sagas. Bp. P. E. Müller, in *Sagabibliothek* (Copenh. 1817–20), was the first who subjected the whole saga-literature to critical treatment. Since his time, collections both of the historical and legendary sagas, with critical apparatus more or less complete, have appeared in all the countries of the north.—The German *Sage* is the same word, and expresses fundamentally the same idea as the Norse *Saga*—the difference being that the Germans do not restrict its application to the legendary or traditional literature of their own country, but extend it to that of others.

SAGABENUM: see SAGAPENUM.

SAGACIOUS, a. *sa-gā'shŭs* [F. *sagace*—from L. *sagax* or *sagācem*, wise, foreseeing: It. *sagace*]: *literally*, keen of scent; acute; discerning; foreseeing; shrewd; intelligent. SAGA'CIOUSLY, ad. *-lĭ.* SAGA'CIOUSNESS, n. *-nĕs*, or SAGACITY, n. *sa-găs'ĭ-tĭ* [F. *sagacité*—from L. *sagacĭtātem*, keenness, acuteness]: the quality of being sagacious; acuteness; penetration.—SYN. of 'sagacious': shrewd; acute; keen; sharp; quick; judicious; discerning; sage.

SAGAMORE, n. *săg'a-mōr:* a chief among some tribes of Amer. Indians.

SAGAPEN, n. *săg'a-pĕn:* same as SAGAPENUM.

SAGAPENUM, n. *săg'a-pē'nŭm* [Gr. *sagapēnon*, perhaps the *Fer'ŭla Persĭca*, also its gum]: a fetid gum-resin brought from the East, used in medicine—seems to be the product of a species of *Ferŭla*, ord. *Umbellif'ĕræ.*

SAGASTA, *sā-gās'tā*, PRAXEDES MATEO: Spanish statesman; 1827, July 21—1903, Jan. 5; b. Torrecillaen, Cameros. He studied for the profession of engineer; was elected a member of the Cortes 1854; and as a pronounced radical and revolutionist was obliged to escape to France in 1856 and 1866. In 1871 he became president of the Cortes, and held important positions in successive ministries. During the Spanish-American troubles he was summoned to form a cabinet in 1897, and resigned in 1899. He was prime minister again 1901–2. He was considered the most prominent Spanish statesman of modern times.

SAGE, a. *sāj* [F. *sage:* Sp. *sabio*, prudent—from L. *săpĕrĕ*, to be wise: It. *saggio*]: wise; prudent; proceeding from wisdom; grave; well-judged: N. a wise man; a man venerable in years, and renowned for wisdom and gravity; a grave philosopher. SAGE'LY, ad. *-lĭ.* SAGE'NESS, n. *-nĕs*, the quality of being sage; wisdom; prudence; sagacity.—SYN. of 'sage, a.': wise; sagacious; prudent; judicious; sapient; grave.

SAGE, n. *sāj* [F. *sauge*, sage—from L. *salvĭa*, sage—from *salvus*, safe, sound, so called from its supposed healing properties: It. *salvia*]: aromatic garden herb, used in cookery as a condiment, and in medicine; species of *Salvĭa*, ord. *Labĭātæ*, particularly *Salvĭa offic'inālis* and *S. grandĭflōră*. SAGY, a. *sāj'ĭ*, full of sage; seasoned with sage.—*Sage* is a genus of plants containing many species, herbaceous and half-shrubby. There are only two perfect stamens, the filaments of which bear at their summit a cross-thread—the much-elongated *connective*—fastened by a joint, and having one cell of the anther at the upper end, and the other but imperfect cell at the other end. The seeds of many of the species, when steeped in water, become covered with mucilaginous slime, like quince-seeds. —COMMON S., or GARDEN S. (*S. officinalis*), grows wild on sunny mountain slopes and rocks in s. Europe, and has long been in general cultivation in gardens. It is a half-shrubby plant, seldom more than two ft. high, with ovate-oblong, or lanceolate, finely notched, curiously wrinkled, whitish-gray leaves, and racemes of purplish-blue, rarely white or red, flowers. The whole plant has a strong, penetrating, aromatic smell, somewhat resembling camphor, and a bitterish, aromatic, somewhat astringent taste. It contains much essential oil (*Oil of S.*), used sometimes in liniments for rheumatism. *S. leaves* are much used in flavoring dishes, and in sauces, etc. The leaves and young shoots are used for astringent tonic gargles. *S. tea*, made of the dried leaves and shoots, is a popular astringent and tonic. S. grows best in a dry soil, and is easily propagated by slips or cuttings.—Other garden sages are the blue Mexican *S. patens;* the Mexican cardinal *S. fulgens;* the tropical American *S. coccinea;* the bristly *S. pseudo-coccinea;* and the Mediterranean white *S. argentea*. Our wild species include *S. lyrata*, with upper lip of calyx 3-toothed, and four s. or s.w. species, this side of the plains, all blue or white.—CLARY (q.v.) is a species of sage.—MEADOW CLARY, or MEADOW SAGE (*S. pratensis*), is a common ornament of meadows and borders of fields in most parts of Europe: it has bluish-purple flowers. It is sometimes fraudulently put into beer, to make it more intoxicating.—The APPLE-BEARING S. (*S. pomifera*) is a native of s. Europe and of the East, remarkable for its very large reddish or purple bracts, and for the large gall-nuts which grow on its branches, as on the leaves of the oak, and which, known as *S. Apples*, have an agreeable aromatic taste.—Some of the species of *Salvia* have very beautiful flowers, and are prized ornaments of gardens and greenhouses.

SAGE'-BRUSH: popular name of several species of *Artemisia*, the genus of wormwood and mugwort (family *Compositæ*), abounding on the dry plains of the west. Of these, *A. tridentata* is conspicuous. The species are bitter and aromatic, and these qualities seem to have suggested the name Sage, which belongs properly to plants of quite another family, the Mints (*Labiatæ*). One species, called White Sage-brush, is said to be agreeable and nutritious to cattle.—See ARTEMISIA.

SAGE, *sāj,* Henry Williams: donor to education: b. Middletown, Conn., 1814, Jan. 31—1897, Sept. 17, d. at Ithaca, N. Y. He prepared for college, but became a mercant in Ithaca, N. Y., where he has since resided, except 1857–80 in Brooklyn, N. Y. In 1847 he was a member of the N. Y. legislature. He was associated with the late John McGraw (large donor to Cornell Univ.) in great lumber enterprises, especially at West Bay City, Mich., where Mr. S. gave a public library at a cost of $30,000. He made liberal benefactions to many educational and religious objects, endowed the Lyman Beecher lectureship on preaching at Yale, and contributed much to the Henry Ward Beecher statue; but his principal gifts were to Cornell Univ., and he became pres. of the trustees in 1874. Among his gifts were: $267,000 for the dept. for women, known as Sage Coll., with equipment, conservatory, etc.; Sage Chapel, $31,000; chairs of ethics and philos., $261,000; library building and endowment, $560,000; other donations, $58,000: total $1,177,000.

SAGE, RUSSELL: American capitalist; 1816, Aug. 4—1906, July 22, b. Shenandoah, Verona township, Oneida co., N. Y., d. New York city. His parents were comparatively poor, and he received the bare elements of education improving himself later by advanced study in arithmetic, bookkeeping, etc. The building of the Erie canal near his home and its completion in his ninth year, was an event, the magnitude and possibilities of which, first impressed themselves on his youthful mind. At 13 years of age he was helping as salesman in a small country grocery store kept by his brother at Troy; pins then sold at $1 a paper, and matches just invented, had not yet reached the village. At 20 years of age, he was independently well-to-do, and started in the retail grocery business for himself, in 1837. Two years later he became a wholesale grocer at Troy where he remained until 1859, becoming a successful politician in his 30th year, and a leader in Congress at 36. In 1863 he removed to New York, where, already interested in the problems of transportation, he devoted himself entirely to business and began large operations in railroad and other securities. He became associated with Jay Gould and other financiers, during his long life was a director in more than 26 large corporations, and amassed one of the largest fortunes in America, estimated at his death at $80,000,000. S. was not known as a generous man, and the bulk of his fortune was left to his second wife Mrs. (M. O. Slocum) Russell Sage, a graduate of Troy Female Seminary founded by Emma Hart Willard; well-known for her judicious interest in the charitable and benevolent movements of the day, S. placed implicit reliance on her wisdom in such matters for the distribution of his wealth.

SAGE, Le: see Le Sage, Alain René.

SAGE-COCK: see Cock of the Plains.

SAGGER, n. *săg'gẽr* [prov. Eng. *saggard;* a probable corruption of *safeguard*]: a clay used to make the pots in

which earthenware is baked; the pots are then called *saggers* or *seggars*.

SAGHALIN, *sâ-gâ-lēn'*, or SAKHALIN, *sâ-ċhâ-lēn'* (often written SAGHALIEN; native name *Karaftu* or *Karafuto*): long and narrow island, extending from n. to s., close off the shores of Asiatic Russia, in the s.w. of the Sea of Okhotsk; lat. 45° 54′—54° 24′ n.; 670 m. long, 20 to 150 broad; 24,560 sq. m. It formerly belonged partly to Russia, partly to Japan, but under pressure Japan surrendered its portion 1875, regaining it in 1905. In lat. 52° the island approaches within six m. of the mainland, from which it is separated by the shallow Mamia Strait, or Strait of Tartary. A mountain chain with craggy summits, which in lat. 52° are covered with snow throughout the year, traverses the island from n. to s. There are no important natural harbors. The chief rivers are the Ty, falling into Patience Gulf, 90 ft. wide and 7 ft. deep at its mouth, and the Tymy, flowing n.e. The rivers and the coasts swarm with fine fish. Immense stores of fish are preserved in a frozen state during winter, on which in great part the natives and their dogs subsist. On the e. coast of the island, the vegetation, especially in the n., is stunted. On the w. coast, grass clothes the valleys, and forests of pine, fir, birch, larch, oak, and maple cover the mountains. Among animals are the reindeer, the stag, roe, elk, and musk ox. The climate is very cold: in the n. part of S. it is even more rigorous than at Nikolaevsk (q.v.). At Aniva Bay, in the s., the coldest day in the winter of 1853—4 showed a temperature of —13° F. After the Russians occupied the island in 1875 they attempted to colonize it chiefly by convicts, who were largely employed in the coal mines, found in several localities. Vast oil fields were discovered, and their exploitation begun. The fisheries of great importance to the Japanese of northern Hokkaido were increasingly developed both by Russians and Japanese, herring for fish manure being annually imported by the latter to the value of $1,000,000. During the Russo-Japanese war, the Japanese landed troops at Korsakovsk after some resistance on the part of the Russian garrison, which surrendered 1905, July 31, Gov. Liapnoff, 70 officers and 3,200 men being made prisoners, and considerable spoils of war captured.

During the negotiations for peace, the cession of Saghalin to Japan was one of the great difficulties towards a final agreement, which was eventually overcome by Russia ceding the southern half of the island to the 50° of n. latitude. Pop. 28,200.

SAGHALIN ULA HOTUN, *sâ-gâ-lēn' ô-lâ' ho-tôn'* (now usually and more properly AIGUN): town of Manchuria, on the right bank of the Amur, 14 m. below the junction of the Dzeva with it; lat. 50° 15′ n., long. 127° 40′ e. It is the chief place of the Manchus on the Amur, and is sombre in appearance, though it has many gayly painted temples. The great quadrangle, containing the govt. and other buildings, is 230 yards sq., and is surrounded by

double rows of palisades. Paper lanterns hang across the streets, and fantastic figures—dragons, etc.—cut in paper, are fixed to poles above the shops. Millet, tobacco, and other products are grown in the vicinity for export. Pop. 15,000.

SAG HAR'BOR: village on the n. side of Long Island, in Suffolk co., N. Y.; on Gardiner's Bay and the Long Island railroad; 10 m. s. of Greenport, 100 m. e.-by-n. of New York. It is a port of entry and the principal marketing-place in e. Long Island; has an excellent harbor and considerable commerce by rail and water; contains cotton, leather, cigar, and watch-case factories, steam flour-mills, banks, churches, schools, and public library. Sag Harbor was formerly noted for its whaling industry valued at $1,000,000 yearly. It is now a favorite summer resort. Pop. (1900) 1,969; (1910) 3,408.

SAGINAW, *săg'ĭ-naw:* city, cap. of Saginaw co., Mich.; on both sides of the Saginaw river, 18 m. s. of Saginaw Bay; and on the Michigan Central, the Flint and Pere Marquette, and the Detroit Lansing and Northern railroads; 64 m. n.e. of Lansing, 100 m. n.w. of Detroit; 14½ sq. m. The river is here navigable for the largest lake craft, and is crossed by fine bridges. Since the consolidation act of 1890, Mar. 3, the city has included the former cities of Saginaw City and East Saginaw, which are connected by several lines of street railroad. East Saginaw was well laid out, substantially built, and provided with water on the Holly system; Saginaw City was built on a plateau 30 ft. above the river, with a similar water system and thorough drainage. The former city had a large trade by rail and lake in lumber and salt, the car-shops of the Flint and Pere Marquette railroad, and several machine-shops; and the other, excluding saw-mills and salt-works, had the most important and varied manufactures, including leather, bricks, iron and steel products, graphite, furniture, vehicles, pianos and musical instruments, baskets and a great variety of wood products, boats, malt liquors, and flour. The neighboring bituminous coal-fields employ 1,500 miners from the city alone, and the pay-roll is $100,000 a month. The total number of wage-earners in Saginaw is 26,000. The streets of the city are wide and well paved, many with asphalt, and are traversed by electric railroads, two of which reach out into the surrounding country. The chief buildings are the Federal building, Masonic temple, the churches, schools, hospitals and other charitable institutions, national and state banks, and other business buildings, the theatres and several spacious public halls; the public libraries include the Hoyt founded on a $100,000 bequest. E. Saginaw, which was the largest of the two

cities prior to the consolidation, was inhabited by straggling half-breeds 1847. In that year Curtis Emerson located at what is now known as the 'South End.' In 1849 Norman Little, agent for Jesse Hoyt and a syndicate of New York capitalists, located 'Hoyt's plat,' on which the leading business houses now stand, and began establishing a village. The first permanent settlers were New York families. The place grew rapidly, fostered by excellent railroad and lake facilities for trade, and received a city charter 1859. Pop. (1910) 50,510.

SAGINAW: a river in Michigan which is formed by the junction of the Flint and Shiawassee, and flows nearly due north into Saginaw bay. The main stream is only about 30 m. long, but with its branches it drains a large portion of the Lower Peninsula. It is navigable to the city of Saginaw, 24 miles.

SAGINAW BAY: the largest inlet of Lake Huron on the coast of the United States. It indents the east coast of the Lower Peninsula of Michigan. It is about 60 m. long and 30 m. wide. It is a safe harbor and never dangerously rough, although it is sometimes subject to storms. The color of the water is different from that of the open lake; it is a brownish-green.

SAGITTA, n. *să-jĭt'ta* [L. *sagitta*, an arrow or dart]: the Arrow; one of the old constellations. SAGITTAL, a. *săj'ĭt-tăl*, pertaining to or resembling an arrow. SAG'ITTA'RIUS, n. *-tā'rĭ-ŭs* [L. *sagittārĭus*, an archer]: one of the 12 signs of the zodiac, which the sun enters on Nov. 22. SAG'ITTARY, a. *-tėr-ĭ*, pertaining to an arrow: N. a centaur, a fabled animal, half man, half horse, armed with a bow and quiver. SAG'ITTATE, a. *-tāt*, in *bot.*, shaped like an arrow-head. SAGITTAL SUTURE, in *anat.*, the suture which unites the parietal bones of the skull.

SAGIT'TA: small marine worm, type of the archaic group *Chætognatha*.

SAGITTARIA: a genus of the water-plantain family (*Alismeæ*). It is a widely distributed genus, wholly or partly aquatic, native to the temperate zones and the tropics. The species are handsome, with lance-like, elliptical or arrow-shaped leaves, erect or floating; the flowers are verticillate in trios around the upper part of the scapes, that carry them well above the water, and are 3-merous, with beautiful white and crinkled fugacious petals. The common arrow-head (*S. variabilis*), grows in the mud along rivers and ditches, and is very ornamental with its charming whorls of flowers rising from the center of a cluster of large, erect sagittate leaves, varying surprisingly in different plants in respect to size and shape. It is a perennial, with thick fibrous rootstocks, which produce oval, fleshy tubers, often as large as a hen's egg, abounding in starch, and a staple and nutritious article of food with many Indian tribes. The squaws sometimes waded into the mud where the arrowheads grew thickly, loosened the tubers with their toes, and when the plants

floated to the surface, captured them and flung them into canoes, to be boiled or roasted. *S. climensis* is cultivated in China for food.

SAGITTARIUS: in Astronomy, the ninth sign of the zodiac, into which the sun enters Nov. 22. The constellation consists of eight visible stars. It is represented on celestial globes and charts by the figure of a centaur in the act of shooting an arrow from his bow.

SAGO: a farinaceous food, obtained from the central portion of various species of tropical palms, principally, however, from *Metroxylon rumphii*, or *M. lævus*. The sago-palms flourish in wet soil, and are cultivated in the East Indies, and particularly in Sarawak. They are rarely over 30 feet high and have stout stems, with an outer rind about two inches thick, as hard as bamboo, but filled with spongy pith, containing a large proportion of starch.

The preparation of sago is one of the industries of the East Indies. The trees flower only once, and if allowed to do so, and to fruit, would exhaust the mass of starch stored in their stems, and then die, after propagating themselves either by seeds or by offshoots. To prevent this, the trees are felled when they are about 15 years old, and on the point of flowering. The starchy tissue, then most productive, is extracted, and pounded or grated to a powder. This is kneaded in water, in a cloth or sieve, the escaping water carrying the starch into a trough, where it is washed and settled out, until fit for use. The water is then drawn off, and the caked residue is ready for native cookery.

Sago-meal is eaten by the natives as pottage, or as biscuits, partially baked in earthen molds. It is not entirely soluble in hot water, as is ordinary starch, and can therefore be employed in making puddings, etc., forming a valuable article of food, as it is cheap, nutritious and easy of digestion. In Europe it is used for feeding stock, making starch, and by cocoa manufacturers for their beverages.

Portland sago is a delicate farina extracted from the corm of the European wake-robin (*Arum maculatum*). Wild sago is the product of the coontie-root (*Zamia integrifolia*), a cycadaceous plant of Florida, well known as an article of food among the Seminoles; and other cycads, incorrectly called 'sago-palms,' furnish a coarse kind of sago.

SAGOIN, or SAGOUIN: a French form of the native South American name of a genus (*Callithrix*) of Brazilian monkeys, of small size and remarkably light, active, and graceful in their movements.

SAGUA LA GRANDE: Cuba; town, province of Santa Clara; on the Sagua la Grande river; 150 m. e. of Havana. It carries on a considerable trade in sugar and molasses. Among its public buildings are a hospital, a town hall, and a large church; it has also several schools. Pop. 12,728.

SAGUENAY, *săg-ė-nā'*, River: large river of Canada, falling into the estuary of the St. Lawrence, on the n. side, about 115 m. below Quebec. It drains the Lake of St. John, which is nearly circular and almost 30 m. in diameter. Its course from that lake to the Gulf of St. Lawrence is about 100 m., almost straight. It flows between precipitous cliffs, has numerous cataracts in its upper part, and is in many places two or three m. broad. In the lower part of its course, it is less wide, but very deep, and large ships ascend it more than 60 m. to load with timber from the settlements on its banks. Its scenery toward the mouth is wonderfully grand, with vast precipices of rock overhanging immense depths; and attracts great numbers of visitors.—The name S. is sometimes given also to the principal river which falls into Lake St. John, and known to the Indians as the Chomouchouan and as the Assouapmoussoin. It rises about 200 m. w. of Lake St. John. The average depth in mid-channel is 145 fathoms.

SAGUE'RUS: see Gomuto.

Sagum.

SAGUM, n. *sā'gŭm* [L.]: in *anc. Rome*, the military cloak worn by common soldiers and inferior officers, made of wool, and open in front, and usually fastened across the shoulders.

SAGUNTUM, *sâ-gŭn'tŭm:* wealthy and warlike town of anc. Spain, in Hispania Tarraconensis, which stood on an eminence near the mouth of the Pallantias (modern Palancia): its site is now occupied by the town of Murviedro (q.v.). Founded (according to Strabo) by Greeks from Zacynthus, it early became notable by its commerce, and attained great wealth. But it owes its historical place to its siege and destruction by the Carthaginians, under Hannibal, B.C. 218. Having withstood the siege for the greater part of a year, against an army of about 150,000 men, led by a general of consummate ability and indomitable resolution, the Saguntines, now most severely pressed by famine, ended with an act of heroic defiance and self-sacrifice a resistance that had been characterized by brilliant valor. Heaping their valuable effects into one vast pile, and placing their women and children around it, the men issued forth for the last time against the enemy; and the women, setting fire to the pile, cast themselves upon it, with their children, and found in flames the death which their husbands met in battle. The destruction of S. directly led to the second Punic war. The Romans restored the city, and made it a colony.

SAGY: see under Sage 2.

SAHARA, *sȧ-hȧ'ra:* in its widest and usual sense, the immense tract extending e. from the Atlantic across Africa, on both sides of the Tropic of Cancer; for which, see AFRICA. But the term S. is more correctly applied to a region of far less extent. The natives divide Africa n. of the equator into three portions—the Teli, the Sahara, and the Desert. The Tell extends from the Mediterranean to the Atlas Mountains; the Sahara, from the Atlas to the s. region, where all regular supply of water fails; and the Desert, from the s. and indefinite frontier of the S., s. almost to the watershed of the Niger, comprising a district salt and arid, inhospitable to man and beast, though the camel may even here snatch a scanty subsistence. As to physical geography, the S. may be sub-divided into the following districts: 1. The Hauts Plateaux, or Steppes, series of high levels skirting the base of the Atlas Mountains. 2. The land of the Dayats, or waterless oases, stretching s. to the high lands on the s. bank of the Wed Mzi or Djidi. 3. The region of the southern oases, s. of the former, and extending s. till it loses itself in the Desert. The scheme of flooding the natural depression in the w. S. as a commercial water-way to the interior has been criticised as of doubtful possibility. Since 1905, a line of telegraphic communication extends from Algeria northward across the Sahara to Timbuktu.—Pop. of S. estimated about 2,850,000.—See H. B. Tristiam's *Great Sahara;* Nachtigal's *Sahara and Sudan* (1879).

SAHARANPUR, *sa-hȧr-an-pȯr'*, or SUHURUNPUR, *sȯ-hŭr-ŭn-pȯr':* town of Brit. India, N. W. Provinces; the chief place of the dist. of S. It is in a plain in n. lat. 29° 58′, and e. long. 77° 36′, about one m. e. of the Doab canal. It has a large fort, a military cantonment, and a govt. depot. S. is about 1,000 ft. above the sea, and the climate is temperate during great part of the year: S. was therefore chosen as a suitable situation for a botanic garden (1817) for plants requiring more temperate climate than that of Calcutta. S. is described as one of the most handsome Brit. stations in India. Pop. 63,850.

SAHIB, n. *sȧ'ĭb* [Ar. *sahib*, lord, master]: in *India*, usual designation and address of a respectable European, equivalent to Mister, Sir, etc. In Bengali and Mahrati, the word assumes the form *Saheb.* SAHIB-LOG [Skr. *log*, people] Europeans. SAHIBA, n. *sȧ'ĭb-a*, a lady; a mistress. MEMSAHIB, n. *mĕm-sȧ'ĭb* [Anglo-Indian]: a white lady.

SAHLITE, n. *sȧ'līt* [*Sahla*, in Sweden, and Gr. *lithos*, a stone]: a massive variety of augite of a dingy-green color.

SAIC, n. *sā'ĭk* [Turk. *shâika:* F. *saïque*]: a Turkish or Grecian sailing-vessel, common in the Levant.

SAID, v. *sĕd* [from SAY, which see]: pt. and pp. of the verb *say;* uttered; declared; reported; before-mentioned.

SAID, n. *sā'ĭd* [Ar. a prince]: a descendant of Mohammed through his daughter Fatima and his nephew Ali; a scherif or emir.

SAI'DA: see SIDON.

SA'ID PASHA': see EGYPT.

SAI'GA: see ANTELOPE.

SAIGO, or SAIGO TSUKUMICHI (SAIGO THE YOUNGER): soldier: b Satsuma, Japan, about 1836. He was prominent in the suppression of the rebellion against the mikado 1868; was commander of an expedition to Formosa 1874, remained for 6 months, and reduced the cannibals to subjection; was in the United States 1876 as head of the Japanese commission at the Centennial Exhibition, and the following year commanded a force which suppressed the Satsuma rebellion. He was afterward commander-in chief of the army of Japan.—His brother, S. TAKAMORI, soldier (b. Satsuma, about 1827), was one of the leaders of the movement which resulted in establishing the monarchy, led the mikado's army 1868, became marshal of the imperial army 1873, established at Satsuma schools for military instruction, and was the leader 1877 of the Satsuma rebellion. After a desperate war against overwhelming odds, his whole force was destroyed or committed suicide, in the battle of Shiroyama.

SAÏGON, *sī-gon':* one of the finest river-ports in Asia, cap. of the French possessions in Lower Cochin China; on the small river S., about 35 m. from the Chinese Sea. The city is fortified, and its value as a strategical position is unquestionable. By land it is defended from attack by many miles of jungle and swamp, and the approach from the sea on the s., by the fine river Dong-nai, could easily be rendered impassable to the strongest fleet. The entrance to the Dong-nai is at Cape St. Jacques, and its winding course to the city, through a rich level country, is 50 to 60 m. in length, defensible by fortifications at every point. It is of easy navigation, and of sufficient depth to allow vessels of heaviest burden to sail close to its banks under the overhanging foliage. The breadth of the river from S. to the sea, generally 1,200 ft. or more, varies little; it is joined on both sides by many large affluents, and is the main channel of a river system that covers the whole country s. of the cap. with a network of water-courses. The city of S. is fortified, and is defended by a permanent force of several large ships of war and a garrison of 10,000 men. S. consists of two parts: the Chinese town, four m. inland, filled with an active trading population; and the European or fortified town on the banks of the Saïgon. The latter is of considerable size. Good roads have been constructed for miles around; and there are barracks, hospitals, official residences, and other public buildings. The soil is abundantly fertile, admirably suited to production of cotton, sugar, indigo, and tobacco, besides rice, the principal export. The surrounding forests contain magnificent timber, and abound in woods rich in dyes. There is a naval yard and arsenal. Pop. 80,000, with suburbs 207,000.

S., with part of the territory of which it is cap., was taken by the French 1860. Treaties of peace and commerce, concluded with the Anamite govt. 1864, provided that the

protectorate of the six provinces of Lower Cochin-China should remain in the hands of France; that three important ports on the coast of Anam should be opened, and that a space of nine kilometers on the shore of each port should be conceded to the French for factories; that French merchants and missionaries should be allowed to traverse the kingdom of Anam without hindrance; and that an indemnity of 100 millions of francs should be paid. In 1867, in consequence of fresh aggressions, encouraged by the government of Anam, the French took the town of Vinh-long, and, by a new treaty, added three other provinces to their dominions, which now extend from 9° 5′ to 10° n. lat., and from 105° to 107° e. long. Pop. (1901) 2,968,529.

SAI KIYO, *sī-kē′yō,* or MIA′KOS: ancient capital of Japan. See KIOTO.

SAIL, n. *sāl* [Ger. *segel;* Icel. *segl,* a sail: Dut. *zeil:* comp. Gael. *seol,* to sail]: sheet of strong canvas which, when spread out on the mast or yard of a ship, catches the wind and impels it through the water—there are many sails in a ship, and each one has a different name: a ship or ships; an excursion in a ship; in *poetry,* wings: V. to be moved or impelled by the force of the wind on sails, as a ship on water; to be conveyed in a vessel; to begin a voyage; to float or pass smoothly along; to fly without striking with the wings, as a bird. SAIL′ING, imp.: N. act of moving on water, as a ship; art of directing a ship by means of a chart (see SAILINGS): act of setting sail. SAILED, pp. *sāld.* SAIL′ER, n. *-ėr,* a vessel with reference to her speed or sailing qualities. SAIL′OR, n. *-ėr,* a seaman; a mariner. SAIL′LESS, a. *-lĕs,* without a sail. SAILCLOTH. SAILING-MASTER, the officer who directs the navigation of a ship of war—now called *navigating lieutenant.* SAIL-YARD, a yard or spar on which a sail is extended. TO LOOSE SAILS, to unfurl them. TO MAKE SAIL, to extend an additional quantity of sail. TO SET SAIL, to begin a voyage. TO SHORTEN SAIL, to take in a part of the sails. TO STRIKE SAIL, to lower the sails suddenly. FULL SAIL, with all sails set. UNDER SAIL, having the sails spread.

SAIL, or SAIL-TAILED, LIZARD: a large agamoid lizard (*Lophurus amboinensis*) of the Philippines, Celebes, Java, and neighboring islands, which takes its name from the tall sail-like crest bone upon the upper surface of the tail of the adult, which is supported by a great lengthening of the spines of the vertebræ of that region; the tail otherwise is highly compressed, long and powerful. This lizard frequently exceeds three feet in length, is olive-green spotted and marbled with black, and has many curious folds of skin about the neck. It is strong and active and spends much of its time in trees, but when alarmed or chased rushes for water, dives to the bottom and endeavors to hide among the stones. It is defenseless and harmless, and its flesh, which is white and tender, is much liked by the islanders.

SAIL, on a Vessel: expanse of canvas, matting, or other strong material, on which the wind may exert its force and propel the vessel. A sail is extended by means of a mast or yard, or both. It may be of various shapes, and of any size, according to the carrying power of the vessel. A vessel of shallow draught or of narrow beam can bear comparatively little sail; while a vessel of proportionately

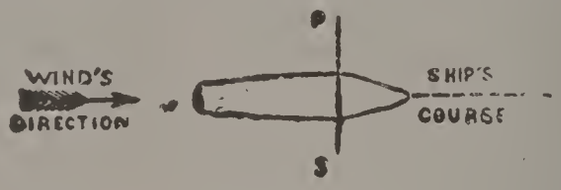


Fig. 1.

deep draught and heavily ballasted—as a yacht—or a vessel of great breadth of beam, can carry sail of great area. A sail acts with the greatest power when the wind is directly astern, as in fig. 1; but it can be applied, though with less strength, when on either beam. The action of the wind on an oblique sail is a good example of the resolution of forces: see COMPOSITION AND RESOLUTION OF FORCES, etc. Let TD, fig. 2, be a ship, PAS its sail, WA the direction of the wind, and let the length of WA represent the pressure of the wind on the sail. WA can be resolved into AB perpendicular to the sail, and BW parallel to it, the latter of which has no effect in pressing on the sail; therefore AB is the effective pressure on the sail. Were the vessel round, it would move in the direction BA.

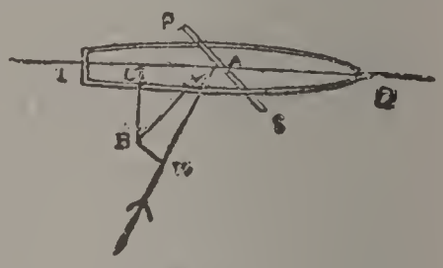


Fig. 2.

Let BA be resolved into CA and BC, the former, CA, acting in the direction of the keel or length of the vessel, or in the direction CAD, and the latter perpendicular to it, or in the direction of the breadth. The former pressure, CA, is the only pressure that moves the vessel forward, the other, BC, makes it move sideways. From the form of the vessel, however, this latter force, BC, produces comparatively little lateral motion; any that it does occasion is called *leeway*. It results, therefore, that with the wind exerting an oblique pressure, the actual pushing or propelling effect will be to the power of the wind only as CA to WA. A vessel with a side wind makes better progress than with the wind exactly aft. All the sails draw and seem to work to better advantage with a side wind.

In the East and the Mediterranean, sails are frequently of strong matting; but among northern nations, and for ocean navigation, very strong cloth, or canvas, called *sail-cloth*, is the usual material. In the U. S. it is termed *duck* and is rated by weight per sq. yard. It is woven narrow; and the many breadths in the sail are joined by carefully made double seams.

Sails are nearly always either triangular or quadrilateral, but not necessarily equiangular. The commoner forms

are shown in fig. 3. To give greater strength, a strong rope or cord is sewn into the outer edge all round the sail: this rope has eyes in it, to which the various ropes employed in connection with the sail are fastened. The top of a sail is its *head;* the bottom, its *foot;* and the sides are *leeches;* the *front* or *fore-leech* is sometimes called the *luff;* the upper corners are termed *earrings* or *head-earing cringles;* the lower corners of a square sail, and the after lower corner of other sails, *clews;* the front lower corner of a fore-and-aft sail is the *tack.* The ropes from the lower corners, used in tightening the sail against the wind, are the *sheets.*

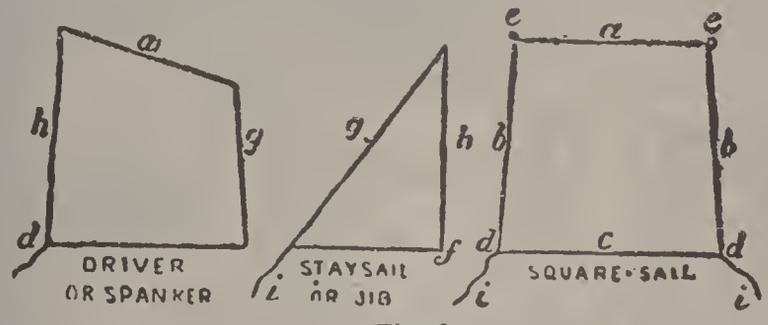


Fig. 3.

a, head; *b*, leech; *c*, foot; *d*, clew; *e*, earrings; *f*, clew: *g*, fore-leech; *h*, after-leech; *i*, sheet.

The sails of a ship are either 'square' or 'fore-and-aft.' The square-sails—beginning from below—are the *course*, the *topsail*, the *topgallant-sail*, the *royal*, and, though not always used, the *sky-sail* or *sky-scraper*. For these sails five yards are required. But as a general rule double topsails, one above the other, are now used, and on large ships double top-gallant sails are often carried. This gives seven yards to the mast. Each has the name of the mast on which it is set prefixed, as 'fore-topsail,' 'main-royal,' etc. The square sails are made fast by their heads to yards, the foot being drawn to the extremity of the yard below. Fore-and-aft sails are the *spanker* or driver, extended by the gaff at its head, boom at its foot, and mast on its fore leech; the *staysails*, which are suspended by rings to the stays, and the *Jibs* (q.v.). In a three-masted vessel, the sails of most importance are the main-course, the spanker, the topsails, the fore-staysail, and the jibs, which can usually all be distended to the full without taking wind from each other. In very light winds, when every breath is of consequence, the area of the sails is increased by setting the *studding-sails*, which are oblong sails set on each side of the square-sails, on short booms run out beyond the yards of the latter. Studding-sails are very little used now. Fig. 4 represents a square-rigged ship, with the whole of her canvas shown.

In small craft and boats, a common sail, particularly in England, is a lugsail (see LUGGER), which is a small square-sail, occasionally supplemented by a shoulder-of-mutton (triangular) sail on a shorter mast at the stern. Cutters or sloops carry a large spanker or mainsail, with a topsail of similar shape, or almost triangular, and jibs; some having the power of setting a large course or square sail

when the wind is astern; but it is obvious that the course and mainsail cannot be used together. A schooner uses the same sails on each mast as a cutter, except that, in one form, she carries a square topsail and topgallant-sail on the foremast.

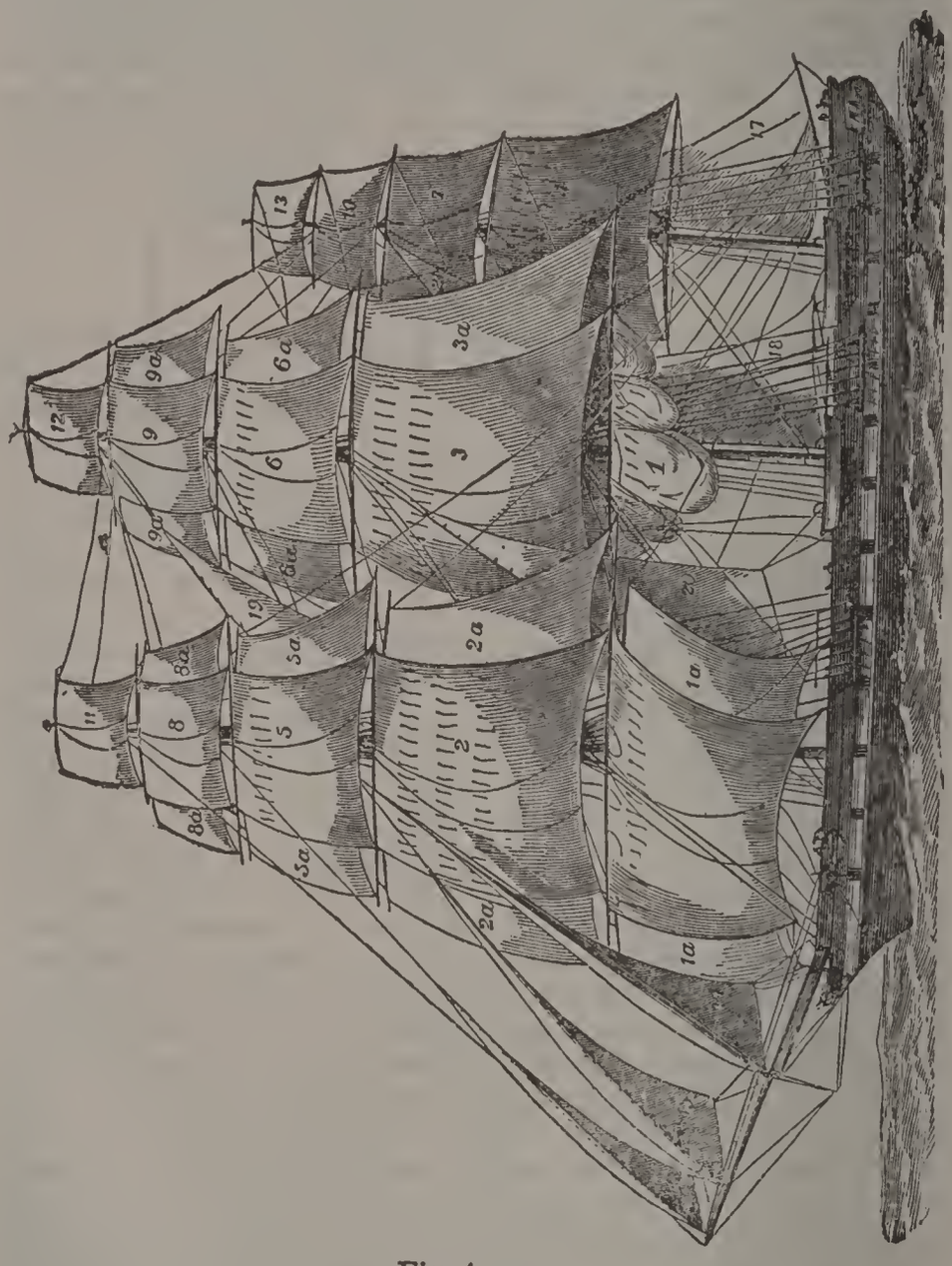


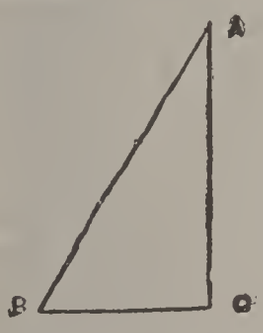
Fig. 4.

1, Course; 1*a*, Studding-sails; 2, Fore-topsail; 2*a*, Studding-sails; 3, Main-topsail; 3*a*, Studding-sails; 4, Mizzen-topsail; 5, Fore-top-gallant sail; 5*a*, Studding-sail; 6, Main-topgallant sail; 6*a*, Studding-sails; 7, Mizzen-topgallant-sail; 8, Fore-royal-topsail; 8*a*, Studding-sails; 9, Main-royal-topsail; 9*a*, Studding-sails; 10, Mizzen-royal-topsail; 11, Fore-skysail-top-ail; 12, Main-skysail-topsail; 13, Mizzen-skysail-topsail; 14, Fore-topmast-staysail jib; 15, Jib; 16, Flying jib; 17, Mizzen spanker; 18, Spenser, 19, Main-royal-stay-sail; 20, Main topmast-staysail; 21, Mizzen-topgallant-staysail.

Sails are furnished with rows of short ropes for the purpose of *reefing* them, when their area is too large for the wind. The effect of a sail is increased by wetting it, as the pores of the canvas close more tightly through the swelling of the hemp.

SAIL'CLOTH: very strong fabric, woven in Britain with linen yarn, but in the United States it is made very generally of cotton; and in Britain, under Armitage's patent, of cotton and linen mixed. Hair—such as of the ox, horse, and deer—also has been used (1832), but without success. Linen and hempen cloths are those generally used in most parts of Europe. For light yachts' sails silk has been employed. In the U. S. navy the sailcloth was of flax, in breadths 20 inches wide.

SAIL'INGS: technical name in navigation for the various modes of determining the amount or direction of a ship's motion, or her position after having sailed a given distance, in a given direction. The direction of a ship's motion is her *course*, and is expressed in terms of the angle between the line of direction and the meridian; the length of her path is the *distance;* the distance in nautical miles made good to the e. or w., is the *departure*, and is measured along a parallel; the *difference of latitude* is an arc of the meridian intercepted by the parallels, one of which passes through the place sailed from, and the other through the place sailed to; and the *difference of longitude* is an arc of the equator intercepted by meridians through the same two places. It is evident that if a ship sails along a meridian, the difference of latitude becomes the course, and there is no departure or difference of longitude; and that if it sails along a parallel the departure will be the same as the distance, and there will be no difference of latitude. The two general questions which present themselves to the navigator for solution are—1. Given the course and distance from one place in given latitude and longitude to another place, find the latitude and longitude of the other; and 2. Given the latitude and longitude of two places, find the course and distance from the one to the other. The simplest way in which such problems can be solved is by the method known as *plane sailing*, a method, however, only roughly approximate, assuming, as it does, that the surface of the sea is a plane; it is consequently applicable only to short distances and low latitudes where the meridians are nearly parallel. According to 'plane sailing,' the elements of a ship's path are represented by a right-angled plane triangle, as ABC (fig.), where AB is the distance, the angle BAC the course, AC the difference of latitude (AC being a portion of a meridian, and BC of a parallel of latitude), and BC the departure. The two problems given above are in this method merely simple cases of the resolution of a right-angled plane triangle (see TRIGONOMETRY), for if the course and distance are given, the *dif. of lat.* = distance × cos. of course, and *dep.* = dist. × sin. of course; while the idea of *dif. of long.*, as distinct from dep., is quite inadmissible, since the method presupposes that the ship is sailing on an absolutely flat plain. If the ship does not stand on one course, but changes from time to time, the calculations of her final position



may be effected, either by the previous method, repeated for each change of course, or more conveniently, by the method of *traverse sailing*. This method consists in the resolution of a ship's course and distance into two courses and distances, the courses being in the direction of some of the four cardinal points of the compass; thus, a ship which has sailed s.w.-by-s. 24 m., has made 20 m. of *southing*, and 13·3 m. of *westing*. The *traverse table* has consequently six columns, the first containing the courses; the second, the corresponding distances; while the third and fourth contain the difference of latitude for each course which, if n. is put in one column, and if s. into the other; the fifth and sixth columns, marked respectivcly e. and w., contain in a similar manner the departure for each course. When the table has been made out for the various courses and distances, the columns of dif. of lat. and departure are summed up, and the difference between the third and fourth, and between the fifth and sixth columns, gives the dif. of lat. and departure between the place sailed from and the place arrived at, from which the course and distance made good can be calculated as before. When a current interferes in any way, either by accelerating or retarding the ship's motion, its effect is estimated as in traverse sailing, as if it were one course and distance, the *set* of the current being the course, and its *drift*, i.e., its rate per hour multiplied by the number of hours it has affected the ship, the distance.

Parallel Sailing may be employed when a ship sails between two places, on the same parallel of latitude, in which case, if her head be kept accurately and constantly in an e. or w. direction, she will describe an arc of the parallel between the two places. As in this sailing the departure is the same arc of the parallel that the difference of longitude is of the equator, the *dep.* (which is now the *distance*) = *dif. of long.* × *cos. of lat.* The other elements are found as in plane sailing.

Middle Latitude Sailing is the application of the principle of parallel sailing to the case in which the ship's course is not perpendicular but oblique to the meridian; it is merely an approximate method, coming very close to a true estimate in low latitudes for any course, and in all latitudes for a course nearly e. and. w. (i.e., one in which the distance is large as compared with the difference of latitude): but erring widely under other circumstances, though errors may be diminished as much as we please by dividing the distance into portions, and calculating the dif. of long. for each. The object of this sailing is to deduce the dif. of long. from the dep., and *vice versa*, on the supposition that the whole departure has been made good along the parallel of latitude which is equidistant from each extremity of the course, a method which, at first sight, seems to give a correct result, and would do so if the parallels of latitude increased uniformly, which they do not. The dep., when laid off along the parallel of middle latitude, always gives the dif. of long. too small, and hence the limitations above noticed. When the latitudes are of the same name, the

middle latitude is half their sum; but when of contrary names, it is better to find the dif. of long. for the portion on each side of the equator separately, the two middle latitudes being respectively half the latitude of the place sailed from, and half that of the place sailed to. The formulas are the same as for parallel sailing and plane sailing.

Mercator's Sailing is a perfect method of obtaining the same result as is found approximately by middle latitude sailing, but in the former case the dif. of long. is found from the departure, while in this method, the difference of latitude is employed for the same purpose. A table of meridional parts, as it is called, is necessary; this table shows the number of minutes in Mercator's projection (see MAP) corresponding to each degree and minute of latitude up to 78°, and is employed as follows: The latitude sailed from, and that reached, being known or found, the meridional parts for each are obtained, and their difference, if the latitudes are of the same name, or sum, if of opposite names, gives the dif. of lat. We have then a right-angled triangle, with the dif. of lat. and dif. of long. forming the two smaller sides, and the vertical angle representing the course, whence *dif. of long.* = *dif. of lat.* × *tan. of course.* This sailing is the one usually employed by navigators, but is inferior in practice to middle-latitude sailing, in the cases noticed under that head, for though it be a perfect, and the other merely an approximate method, yet a small error in the course (if large), or in the dif. of lat., becomes greatly magnified in the dif. of long.; while in the case of the latter, a considerable error in departure is hardly magnified, and a large error in the course (if nearly e. and w.) becomes imperceptible in the dif. of long. It is, however, better to work the problem according to both methods, and then estimate the true result as nearly as possible.

For *Great Circle Sailing*, the most perfect of all methods for finding a ship's course, see that title: see also SPHEROGRAPH.

The obstacles that interfere with the correctness of the mariner's calculations are chiefly those which affect his data, the course and distance, the more important being the magnetic deviation of the compass produced by the attraction of the ship, errors in the estimated leeway or in the set and drift of currents, etc.; all of which require to be taken into account. The necessity for frequently checking the *Dead-reckoning* (q.v.), by means of astronomical observations, is sufficiently apparent.

SAI'MIRI: see SAPAJO.

SAINFOIN, n. *sān'foyn*, or SAINTFOIN, n. *sānt'foyn* [F. *sain*, wholesome—from L. *sanus;* F. *foin*, hay: Cotgrave writes *sainct-foin*, holy hay—as if from L. *sanctus*, holy; but perhaps it is rather *sang-foin*, from the blood-color of the flowers], (*Onobrychis sativa*): plant of nat. order *Leguminosæ*, sub-order *Papilionaceæ*, of a genus nearly allied to *Hedysarum* (see FRENCH HONEYSUCKLE), but having one-seeded pods, marked with wrinkles or pits and more or less prickly-toothed at the margin. It is a spreading perennial, 2 or ½ ft. high, with leaves of 9–15

smooth acute leaflets, and spikes of beautiful flesh-colored flowers, striated with rose-red, on long stalks. It is a native of the continent of Europe and of s. England, but was grown in France earlier than in England, where its cultivation was commenced 1651. It requires a rather warm

Sainfoin (*Hedysarum onobrychis*)

climate and thrives only in soils which contain lime. Seed should be sown at the rate of 4 bushels per acre broadcast, or three bushels in drills. It gives only a light crop the first year; but after that, in suitable soils, yields well for several years. S. can be used for green fodder or for hay: for the latter it should be cut as soon as it blossoms. It is rather difficult to cure. On account of its uneven ripening, it should, when grown for seed, be cut as soon as the lower part of the head, which produces the best quality, is mature.

SAINT, n. *sānt* [F. *saint;* It. *santo*, a saint—from L *sanctus*, holy]: holy person; one of the blessed in heaven; a title given to the apostles and certain eminent persons in eccles. history (see SAINTS); one canonized by the Rom. Cath. Chh.: in New Test. usage, the name applied to all Christian believers: V. to canonize; to act with a show of piety. SAINT'ING, imp. SAINT'ED, pp.: ADJ. sacred; holy; pious; virtuous; entered into everlasting happiness: N. a term sometimes used simply for 'the dead.' SAINT'LY, a. *-lĭ*, or SAINT-LIKE, a. resembling or becoming a saint. SAINTHOOD, n. the state of being a saint; the united body of saints. SAINTSHIP, n. the character or qualities of a saint. SAINT'S BELL: see SACRING BELL, under SACRING. ST. ANTHONY'S FIRE, erysipelas (see ANTONY, SAINT).

ST. CUTHBERT'S BEADS, popular term for the detached bead-like joints of the encrinites. ST. DOMINGO BARK (see CARIBBEE BARK). ST. GEORGE'S ENSIGN, distinguishing badge of ships of the Brit. navy, consisting of a red cross on a white field, with the union-jack in the upper quarter next the mast (see FLAG: UNION-JACK). The *white* St. George's ensign is (since 1864) the naval badge, the red and blue ensigns being left to other Brit. vessels. The ensign is borne at the peak; or in harbor on a flag-staff at the stern, as always in boats. ST. IGNATIUS'S BEAN (see IGNATIUS'S (ST.) BEAN: NUX VOMICA: STRYCHNOS). ST. JOHN'S BREAD (see CAROB). ST. JOHN'S WORT (see HYPERICACEÆ). ST. LUCIE BARK (see CARIBBEE BARK). ST. PETER'S FINGERS, an old and familiar term for *belemnites*, many of which have a finger-like form. ST. VITUS'S DANCE, disease affecting the muscles of voluntary motion (see CHOREA). SAINT-SIMONIAN, *-sī-mō'nĭ-ăn*, follower of the Count de Saint Simon (see SAINT SIMON, CLAUDE HENRI, Comte de).

SAINT (abbreviated ST.): [For names thus beginning, not found under this word, see the other part of the name].

ST. AFFRIQUE' (town, France): see AFFRIQUE, ST.

SAINT AL'BAN (British martyr): see ALBAN, SAINT.

ST. AL'BAN HALL, OXFORD, England: institution named from Robert de St. Alban, citizen of Oxford, who conveyed the building to the nuns of Littlemore, near Oxford, 1230. After several changes it was finally transferred to the warden and fellows of Merton College, and was established as an academical hall. The principal of this, as in the other four halls, is assisted by a vice-principal and other officers appointed by himself.

ST. ALBANS, *sānt awl'banz:* town, cap. of Franklin co., Vt.; on the Central Vermont and Mississquoi railroads; 3 m. e. of Lake Champlain, 32 m. n. of Burlington, 63 m. s. of Montreal. It is on an elevated plain, is supplied with water from a reservoir $4\frac{3}{4}$ m. distant, which gives the water a fall of 300 fet.; has gas and electric lights; and contains a public park of four acres, churches, graded public schools, public high school, several hotels, public library, the Warner Hospital, Warner Home, Villa Barlow Convent, and other institutions. The town is noted for large manufacture of butter, and for the locomotive and car shops of the Central Vermont railroad. It was raided by a band of Confederates from Canada 1864, who robbed the banks of $208,000, of which $88,000, captured on them by the Canadian authorities, were returned. Pop. (1900) 7,954; (1910) 6,381.

ST. AL'BANS (English borough): see ALBANS, ST.

ST. AMAND, *săngt â-mŏng':* town of France, dept. of Cher, on the right bank of the river Cher, 27 m. s.s.e. of Bourges. It has trade in iron. Pop. 8,300.

ST. AMAND': town of France, dept. of Nord, 8 m. n.w. of Valenciennes. The town contains hot sulphur springs and lace, clay-pipes, and porcelain are manufactured. Pop. 13,700.

ST. ANDREWS: very ancient city in Scotland. Its antiquity appears by the number of prehistoric burial remains found here. Monkish tradition assigns the origin of the modern city to St. Regulus, who is said to have brought certain bones of St. Andrew to this place, which previously bore the names Muckross and Kilrimont. The bringing over of these relics is with more reason ascribed to the 8th c., but it seems that before the end of the 6th c. a monastery had been found here. In the 10th c. St. Andrews is said to have been the seat of the 'Ardescop Albain,' the high bishop of the Scots, and in the 11th c. he came to be called 'the Bishop of St. Andrews.' The Augustinian Priory, founded 1144, became the richest religious house in Scotland. The cathedral, more than 350 ft. in length, was founded about 1160, and consecrated in presence of Robert Bruce, in 1318, but was dismantled in 1559, and left to fall into ruin. The Bishop's Palace, now also a ruin, dates from 1200. Other ruins are the St. Rule's tower, which has been the subject of much discussion; the Black Friars' Monastery, etc. The celebrated University of St. Andrews dates from 1411, St. Andrews having become a celebrated educational center as early as 1120. The university consists of the united colleges of St. Salvator and St. Leonard, and the college of St. Mary. University College, founded at Dundee in 1880, was affiliated with St. Andrews in 1890. The university library, founded in 1456, contains nearly 120,000 volumes and manuscripts. The average annual attendance of students, male and female, is about 250. St. Andrews became a free burgh about 1150, and in the 16th c. was reckoned one of the chief mercantile cities of Great Britain, but has now only an unimportant and coasting trade and small fisheries. The town is a popular watering place and summer resort, and is the headquarters of the game of golf, doing a thriving business in golf-clubs and golf-balls. Pop. 7,000.

ST. AN'DREWS: town, capital of Charlotte co., New Brunswick, between the mouth of the St. Croix river on the w. and Passamaquaddy bay on the e.; 65 m. from Fredericton, 3 m. from the e. boundary of Maine. It is a port of entry, has a fine harbor with two entrances, and is the s. terminus of the New Brunswick railway. It is a somewhat noted summer resort, has several churches, a custom-house, postal savings bank and two other banks, a marine hospital, and one weekly newspaper. Agriculture and fishing are principal industries. Pop. about 2,000.

SAINT ANGELO CASTLE: Rome, Italy, a famous fortress situated on the right bank of the Tiber in the northwestern part of the city, opposite the bridge of Saint Angelo, and a short distance from the main buildings of the Vatican. It was built by the Emperor Hadrian as a tomb for himself and his family. Originally it was a round stone tower covered with marble and surmounted by a number of statues, which, together with the marble covering, have disappeared, leaving the

bare stone structure. When the Goths besieged Rome it was used as a fortress.

SAINT ARNAUD'. See LEROY DE SAINT ARNAUD.

SAINT AUGUSTINE SAINT. See AUGUSTINE, ST.

ST. AUGUSTINE, *sānt aw'gŭs-tēn:* city, port of entry, and capital of St. Johns co., Fla.; on St. Augustine bay, 2 m. from the ocean, and on the Jacksonville, Tampa & Key West, the St. Johns, and the St. Augustine & Palatka railroads; 36 m. s. of Jacksonville; considered the oldest city in the United States. Besides its historic memories and antiquities, it is best known as a popular winter resort and sanitarium, having a mean temperature of 70° and seldom any frost. It is connected with northern parts by lines of steam and sailing boats, has some coasting trade; and manufactures, chiefly palmetto-straw goods. It is on a low peninsular plain, separated from the ocean by Anastasia island; has a large and safe harbor with high bar at its entrance; and was originally defended by Fort (or castle) San Marco, subsequently renamed Fort Marion. The city retains the gateway and about 30 ft. of the old city wall on either side, and has public library, court house, Roman Catholic cathedral, Peabody Institute, U. S. army barracks, several churches, and a number of hotels and winter boarding houses. In his quest of the 'fountain of youth,' Ponce de Leon made a landing at or near St. Augustine 1512. Don Pedro Menendez de Aviles took possession of the region in the name of Philip II. of Spain 1565, Sept. 8, landing about 1,500 people from his fleet on the site of the city, and giving it its present name. The city and vicinity remained in the possession of Spain nearly 200 years, or till 1763, when the province was ceded to Great Britain. During the Spanish occupation the fort or castle of San Marco was built by native Indians and Mexican convicts, more than 100 years being passed in the work of construction, and the place attained considerable importance. At one time there was a population of more than 3,000, a military force of 2,500, and nearly 1,000 dwellings of coquina. The Spaniards completed the fort 1756, and the U. S. government added a water battery 1842-3. The Spaniards also began building a sea wall for the city 1690 (remains of which are still seen), and the U. S. government built a very substantial wall with granite coping (cost $100,000) 1837-43, which now forms a delightful promenade. The Roman Catholic cathedral, begun 1793, has a bell dated 1682; the U. S. barracks was the old St. Francis convent; and the U. S. custom-house was the former palace of the royal Spanish governors. The city was burned by Sir Francis Drake 1586; was besieged by Gov. Moore of the Carolinas 1702; was an important British station during the Revolutionary war; saw the British flag lowered and the American flag raised 1821; and was an important military station during the Seminole Indian war 1835-42. Pop. (1910) 5,494:

ST. AUSTELL, *sĕnt aws'tél:* small town of Cornwall, England; 13 m. n.e. of Truro by railway. Woolen goods are manufactured; and at the Bay of St. A., about a mile distant, there is a pilchard-fishery, and tin and copper are exported. Pop. 3,500.

ST. BARTHOL'OMEW (island): see BARTHOLOMEW, ST.

ST. BEES, *sĕnt bēz:* ancient village of Cumberland, England; pleasantly situated on the bay formed by *St. Bees Head.* It is 4 m. s. of Whitehaven, and about 10 m. beyond the limits of the Lake district. St. Bees is a station on the Whitehaven and Furness Junction railway. The parish is very large, comprising town and port of Whitehaven, village of St. Bees, and several chapelries and townships. The village of St. Bees contains about 1,100 inhabitants, and is in some repute as a sea-bathing place. According to tradition, preserved by the early chroniclers, St. Bees originated in a nunnery founded here 650, by an Irish saint named Bega, of whom Sandford's MS. (in the Dean and Chapter Library, Carlisle) records a very pretty legend. The nunnery appears to have been destroyed before the reign of Henry I., in whose time we find that Ranulph, Earl of Cumberland, reconstituted it as a priory; but after the dissolution of the monasteries, it went to ruin. —The institution known as ST. BEES COLLEGE was established 1816 by Dr. Law, Bp. of Chester, to supply a systematic training in divinity to young men desirous of ordination, whose means were inadequate to the expense of a univ. education. A portion of the ruined priory of St. Bees was fitted up by the Earl of Lonsdale as lecture-rooms, library, etc. The principal—perpetual curate of St. Bees—selects his own staff of lecturers. The college course comprises two years; and the standard English divinity works, with the Greek Test., are chiefly studied, and composition of sermons, etc., is practiced. The average number of students is about 100.

ST. BER'NARD, GREAT—ST. BER'NARD, LITTLES: see BERNARD, GREAT ST.

ST. CATHERINE'S, *sānt kăth'ĕr-rĭnz:* incorporated town, province of Ontario, Canada; on the Welland canal, and on the Welland railway; 33 m. s. of Toronto, 12 m. from Niagara Falls. The town is very flourishing, and has large manufactures of machinery and agricultural implements. The surrounding country is picturesque. The well-known mineral well of St. C.'s, whose water is of great value as a remedial agent, supplies on an average 130.000 gallons a day. Of these waters, a large quantity, partially evaporated, is sent out through the country. A second well also is in use. St. C.'s has been called the Saratoga of Brit. America. Its hotels are equal to any in the province. Pop. (1881) 9,631; (1891) 9,170; (1901) 9,946.

ST. AUGUSTINE.

1. The Old City Gate.
2. The Plaza.

ST. CHARLES: city, cap. of St. Charles co., Mo.; on the Missouri river, and on the Wabash, and the Cleveland, St. Louis and Kansas railroads; 22 m. n.w. of St. Louis. It is one of the oldest settlements in the state, and from its elevated position commands an extensive view of country The river is here spanned by an iron railroad bridge, which with approaches, is 2 m. long and cost nearly $2,000,000. The city is in a rich corn and wheat region, and has valuable limestone quarries and coal mines in its vicinity. It has fine churches, public library, Rom. Cath. convent school, St. Charles College (for males), Lindenwood Female Seminary (Presb.), several public, parish, and private schools, public libraries, a court house, St. Joseph's Hospital, national and savings banks. The industrial establishments include railroad carshops, starch factories, woolen mills, iron foundries, breweries, steam flour-mills, and bridge-building works. S. was settled by the Spaniards 1769, and incorporated 1849. Pop. (1870) 5,570; (1880) 5,014; (1890) 6,161; (1900) 7,982; (1910) 9,437.

ST. CHRISTOPHER: see CHRISTOPHER, ST.

ST. CLAIR′: borough in Schuylkill co., Penn.; on Mill creek and the Philadelphia and Reading railroad; 3 m. n. of Pottsville, 10 m. s.e. of Ashland. It is the shipping point for a group of the richest anthracite coal mines in the state; has several manufacturing establishments; and contains churches, graded public schools, public library, and several public halls. Pop. (1900) 4,638; (1910) 6,455.

ST. CLAIR, *sānt klär′*, ARTHUR: revolutionary officer: 1734–1818, Aug. 31: b. Thurso, Scotland; grandson of the Earl of Roslyn. After education at Edinburgh Univ., and studying medicine, he bought an ensign's commission 1757, and came to the N. Amer. colonies in the fleet of Admiral Boscawen. He had part under Gen. Amherst in the capture of Louisberg 1758, and under Gen. Wolfe of Quebec 1759, after which he retired from the army and lived in Ligonier Valley, Penn., where he held the offices of district surveyor, justice, etc. In 1775 he was present at the treaty made with the Indians at Fort Pitt; and, the next year, as col. of a Penn. regiment, he aided Gen. Sullivan in the retreat from defeat at Three Rivers. Appointed brig.-gen. 1776, he took part in the battles of Trenton and Princeton. In 1777 he was made maj.-gen., and was placed in command of Ticonderoga, but was compelled to evacuate by Burgoyne's superior force, which moved on the works by an approach that had been left unfortified. It was a severe disappointment to Washington and the patriots. Gen. St. Clair was, however, acquitted by a court-martial, and he continued in active service till the close of the war. He was member of congress 1785–87; its pres. 1787; gov. of the N. W. Territory 1789–1802; commander against the Indians on the Miami 1791, where he was surprised and lamentably defeated. The rest of his life he passed in

poverty, relieved by tardy pensions. He died at Chestnut Ridge, Penn.

ST. CLAIR RIVER: outlet of Lake Huron, also discharging the waters of Lakes Superior and Michigan; connecting Lake Huron with Lake St. Clair, and forming part of the boundary between Mich. and the province of Ontario, Canada. It flows s. through a fertile region, enters Lake St. Clair by six channels, of which the one on the Mich. side is used for navigation; is about 40 m. long ½ m. wide, and 40–60 ft. deep; is navigable for large steamboats; and has two important towns on its course, Port Huron, Mich., and Sarnia, Canada. These towns have been connected by a remarkable railroad tunnel beneath the river, constructed to unite the tracks of the Grand Trunk railroad, of Canada, with the Chicago and Grand Trunk, the Detroit Grand Haven and Milwaukee, and the Toledo Saginaw and Muskegon railroads, in the United States. The tunnel was built of cast-iron segments by means of the Beach tydraulic shields, is the first cast-iron tunnel of its kind, and the longest river tunnel in the world, 6,050 ft. It was begun 1889, Aug.; built at the rate of 159 ft. per week, the two shields meeting in the centre 1890, Aug. 30; and the first railroad trip through it was made 1891, Apr. 9. The outside diameter is 21 ft. 7 in.; inside 20 ft. The cost was within the estimate of $3,000,000.

ST. CLOUD, *sānt klowd:* city, cap. of Stearns co., Minn.; on the Mississippi river, and on the Great Northern and the Northern Pacific railroads; 75 m. n.w. of St. Paul. It is in an agricultural and lumber country on both sides of the river, and has an exceptional water-power, provided by a dam and canal which costs $400,000. The city contains gas and electric lighting plants, a good system of waterworks, street railroads, several fine churches, public and denominational schools, a State normal school, public library, the State Reformatory prison, opera houses, U. S. land office, and St. Raphael's hospital. The industries comprise grain elevators, saw and flour mills, several foundries and machine-shops, and in the immediate vicinity 23 valuable granite quarries. Pop. (1880) 2,462; (1890) 7,722; (1900) 8,663; (1910) 10,600.

ST. CROIX, *sānt kroy'*, RIVER, called also the Passamaquoddy: stream flowing out of Grand Lake on the e. border of Maine, e.s.e. 75 m. to Passamaquoddy Bay, and forming a portion of the boundary between the United States and New Brunswick.

ST. CROIX RIVER: stream in Wis. flowing s.w. from its source in Douglas co. near the w. part of Lake Superior, to Minn. and then for about 100 m. forming the boundary between the states of Minn. and Wis. It reaches the Mississippi river about 37 m. below St. Paul, is about 150 m. long, navigable for one-third of its course. There are several beautiful falls. An expansion near its mouth is known as St. Croix Lake.

ST. CYR: see CYR, ST.

ST. DOMIN'GO: see DOMINGO, SAN: HAYTI.

SAINTE-BEUVE, *sănt bĕv'*, CHARLES AUGUSTIN French poet and critic of great eminence: 1804, Dec. 23—1869, Oct. 13; b. Boulogne-sur-Mer; son of a controller of customs, who died two months before his birth. His mother, a woman of superior character and intelligence, was of a family originally English, and through her the boy early acquired familiarity with the English language and literature. He studied at the Collége Charlemagne in Paris. On leaving college, though his bent toward literature was already pronounced, he hesitated at taking it as a profession, and betook himself to the study of medicine and anatomy. Shortly, he obtained a situation at the Hospital St. Louis, where he worked steadily; but his spare time was occupied by literature; and his articles in the *Globe* on topics of history, philosophy, and criticism attracted attention, and procured him the acquaintance of Jouffroy. While he was wavering between literature and a profession distasteful to him, Victor Hugo's *Odes et Ballades* were published, and the impression made on him by this work seems to have determined him to a life exclusively literary. He gave up his situation at the hospital, and attached himself to *Le Cénacle*, with Alfred de Musset, the two Deschamps, and others of the so-called Romantic School. Soon, he gave to the world his *Tableau Historique et Critique de la Poésie Française, au XVI.e Siècle* (1828—enlarged 1843), which at once established his reputation as one of the first critics of the time. His next work, *Les Poésies de Joseph Delorme*, though somewhat coolly received by the public, brought him a better meed than any applause of the multitude, the emphatic approval of Béranger and others of the literary guild. *Les Consolations* (1830) was more successful in hitting the public taste. On the cessation of *Le Cénacle*, after the revolution of 1830, S. attached himself to the *Globe;* subsequently, he wrote much in the *Revue des Deux Mondes*, the *National*, and the *Constitutionnel*. In 1834 appeared his *Volupté*, a work curious as a study of moral pathology, but more curious than pleasing; 1840 he pub. vol. I. of *Histoire de Port Royal*, a work which he completed 1860 in five vols. 1845, Feb. 27, he received the most distinguished mark of honor which can come to a Frenchman of letters, election to be a member of the Acad. In 1850, he began in the *Constitutionnel*, the famous series *Causeries de Lundi*, most delightful of all his works, and that by which he is most widely known. After the *coup d'état* 1851, Dec. 2, he became connected

with the *Moniteur*, and was appointed prof. of Latin poetry at the Collége de France. Of this appointment some fruits are before the world in *L'Étude sur Virgile* (1857). In 1865, he was called to be a member of the senate.

As a poet, S., though showing fine talent, never became popular, nor can very high poetic rank be accorded him. But as critic, he was 'himself alone,' and his place is by common consent in the very front of French literature, and among the very foremost of the world. His sympathies were wide and catholic; in delicacy of perception, and subtlety of refined analysis, he was almost without a rival; his style is piquant, lively, fascinating, instinct with individual expressiveness; and nothing can exceed the felicity with which the interest of criticism proper is combined in his sketches with that of anecdotic biography.

Of his works not above mentioned, the following are notable: *Poésies Complètes* (1840); *Critiques et Portraits Littéraires* (1832–39); *Portraits Littéraires* (1844); *Portraits Contemporains; Causeries de Lundi* (1851–57); *Nouveaux Lundis* (1863); *Souvenirs et Indiscrétions; Le Dîner de Vendredi-Saint* (1872). A selection from *Causeries de Lundi* has been transl. into English, with an introduction, under the title *English Portraits* (1875).—See *C. A. Sainte-Beuve, sa Vie et ses Œuvres*, by D'Haussonville (1875); and an article in *Quart. Rev.* No. 281.

SAINTE-CLAIRE-DEVILLE, *săngt-klär-dĕh-vēl'*, Étienne Henri: French chemist: 1818, March 11—1881, July 1; b. St. Thomas, W. Indies. He was educated in France. On quitting college, he constructed at his own cost a chemical laboratory, and for nine years, without master and without pupils, gave himself to patient studies and skilful researches. In 1844 he was commissioned to organize the Faculty of Sciences of Besançon, of which, in the following year, he was appointed dean and prof. In 1851 he obtained the chair of chemistry in the École Normale, which he resigned 1880. In 1853 he became a member of the Faculty of Sciences of Paris; 1861 he was chosen a member of the Acad. of Sciences of the Institute.

In 1849 S. D. made known the mode of preparation and the properties of anhydrous nitric acid, a compound whose existence had been ignored. In 1852 he published an important paper on Metallic Carbonates and their Combinations; and in the following year, a new method of mineral analysis, known as the middle way, in which he proposes the exclusive employment of gases and volatile re-agents, against the errors arising from the use of the filter. About the same time, he began his researches into aluminium, a metal discovered 1827 by Wöhler of Göttingen, but still very little known, and set forth its special properties. Being commissioned by Louis Napoleon to seek the best method of obtaining aluminium at a low price, he made numerous experiments, jointly with M. Debray, in the factory at Javel; and after some months, succeeded in producing ingots of the metal, shown in the Exposition Universelle of 1855. These experiments, and the properties of aluminium, were described by S. D. in scientific periodi-

cals; and among his later papers are—on the Three Molecular States of Silicium; on the Metallurgy of Platina; on the Density of Vapors at very High Temperatures; on the Measurement of High Temperatures; on the Permeability of Iron to Gases at a High Temperature; on the Phenomena of Dissociation in Homogeneous Flames; and on the Industrial Preparation of Aluminium and its Compounds. These valuable papers are in the *Mémoires and Comptes Rendus* of the Académie des Sciences de l'Institut, and in the *Annales de Chimie et de Physique.*

STE. CROIX, or SAN'TA CRUZ. See VIRGIN ISLANDS.

ST. ELIAS, MT. See ELIAS, ST.

STE. MARGUERITE' (islands). See LERINS, THE.

STE. MARIE, *sănt mâ-rē':* island, French possession, off e. coast of Madagascar. See NOSSI-IBRAHIM.

SAINTES, *sănt:* old town of France, dept. of Charente-Inférieure, on the left bank of the Charente, 43 m. s.e. of La Rochelle. In ancient times, this town, under the name *Mediolanum,* was the capital of the Santones, from whom the subsequent province derived the name Saintonge. It contains interesting Roman remains, e.g., a triumphal arch, and the ruins of an amphitheatre, circus, etc. Pop. 18,200.

ST. FRAN'CIS RIVER: stream rising in s.w. Missouri and flowing s.w. to the Mississippi, which it reaches near Helena, Ark. It is 450 m. long, navigable about 150 m., and for quite a distance forms the boundary between Missouri and Arkansas. In Arkansas it passes through an immense swamp and forms several lakes.

ST. FRANCIS XAVIER. See FRANCIS XAVIER, SAINT.

ST. GALL'. See GALL, ST.

ST. GAUDENS, *sānt gaw'dënz,* AUGUSTUS: sculptor: b. Dublin, Ireland, 1848, Mar. 1; d. 1907. He was brought in his infancy to New York. His art studies, begun at Cooper Union 1861, were continued in the National Academy 1865-6, and in Paris and Rome 1867-72, after which he occupied a studio in New York. He was elected academician 1889. Among his works are *Hiawatha, The Puritan, Adoration of the Cross by Angels* (in St. Thomas's Church, New York), *Admiral Farragut* (in Madison Square, New York), a colossal statue of *Abraham Lincoln* (Dearborn avenue, Chicago), and vigorous portrait busts of Gen. Sherman, William M. Evarts, and Theodore D. Woolsey. His colossal statue of Peter Cooper was erected 1897.

ST. GERMAIN, *săng-zhĕr-măng',* Comte DE: mysterious character of whose time and place of birth, and early life, nothing is known: died 1780. He is supposed to have been a Portuguese Jew, and to have been employed as a spy at some of the European courts. He was a learned chemist, master of several languages, was well

versed in history, and claimed to have made important chemical discoveries. Among the latter was that of a liquid by whose use life could be indefinitely prolonged. For many years he was very influential at the court of France, went to England 1760, and afterward lived at St. Petersburg, and at various German courts. He is said to have introduced freemasonry into Germany. He died at Schleswig.

ST.-GERMAIN-EN-LAYE, *săng zhĕr-măng'ŏng-lā':* town of France, dept. of Seine-et-Oise, on an elevation on the left bank of the Seine, 14 m. by railway w.n.w. of Paris. It contains three handsome squares, a parish church, with a monument erected by George IV. over the remains of James II., several learned and other societies and some factories. Pop. 17,300.

S.-G. had its origin in a monastery built by King Robert in the beginning of the 11th c., on the summit of the hill, which was surrounded by the forest of Lyda (*Laye*), and dedicated to St. Germain. The town as well as the royal Château, built either during the reign of King Robert, or soon afterward, was sacked by the English 1346, 1419, and 1438. At S.-G. the marriage of Francis I. was celebrated, and this king rebuilt the château 1547. From before the time of Philippe-Auguste, S.-G. had been the residence of the French court during a portion of the year; but Louis XIV. transferred the court to Versailles, and from this time S.-G. declined. Later, the château was assigned by Louis XIV. as the residence of the dethroned James II. of England; and here in exile that monarch held his morose court, devoting almost the whole day to religious observances. The château contains a museum of national antiquities. The Forest of S.-G. comprises nearly 11,000 English acres.

ST. HELE'NA (island), see HELENA, ST.

ST. HELENS, *sĕnt-hĕl'ĕnz:* municipal borough of Lancashire, England, on a small affluent of the Mersey, 3½ m. by railway n.e. of Prescot. It is a straggling, ill-built, but thriving town, with extensive trade in coal. It has plate-glass, copper, and bottle works; also potteries, breweries, tan-yards, iron and brass foundries. Pop. about 84,400.

ST. HELIERS, *sĕnt hĭl'yĕrz:* town, cap. of the island of Jersey (q.v.), the chief of the Channel Islands; on the s. shore of the island, on the e. side of St. Aubin Bay; lat. 49° 11′ n., long. 2° 6′ w. It is defended by Elizabeth Castle on a rocky island off the shore, approached by a causeway at low water; and by Fort Regent on the s.e. side of the town, built about 1806, on a scarped granite rock at enormous expense. At spring tides, the water rises 40 ft. Victoria College — a handsome edifice, on an eminence — the hospital, the theatre, and the churches, are the chief buildings. There is active trade with England, France and India. Pop. of town and parish about 29,000.

ST. HILAIRE, *săn-tē-lär*, Auguste François Cèsar, called Auguste Prouvençal de, French naturalist and traveler: b. Orléans 1779, Oct. 4; d. there 1853, Sept. 30. A botanical expert, he set out in 1816 on a long journey through Brazil, carrying his explorations to regions then unknown, and returning in 1822 with valuable collections. In 1830 he was admitted to the Paris Academy of Sciences; subsequently he was made professor of botany in the faculty of sciences at Paris. He made several discoveries of scientific value, and published three narratives of travel, *Voyage dans la Province de Rio de Janeiro et Minas Geraes* (1830); *Voyage dans le District des Diamants et sur le Littoral du Bresil* (1833); *Voyage aux Sources de San Francisco et dans la Province de Goyaz* (1847–8); besides *Flora Brasiliæ Meridionalis* (with Jussieu and Cambessèdes 1825), and *Leçons de Botanique* (1840–1).

ST. HILAIRE′, Jules Barthèlemy: see Barthèlemy, St. Hilaire.

ST. HILAIRE, Marco de, pseudonym of Emile Marc Hilaire, French writer: b. Versailles about 1796; d. 1887, Dec. 5. He was educated as a page at the court of Napoleon I., and finding himself without means of support after the Restoration, turned his attention to literature. Though not important as a writer, his continued glorification of Napoleon was popular and undoubtedly did much to pave the way for the Second Empire. His work includes: *Mémoires d'un Page de la Cour impériale* (1830); *Souvenirs de la Vie privée de Napoléon* (1838); *Souvenirs intimes du Temps de l'Empire* (6 vols., 1838–46); *Histoire de Napoleon III.* (1853); etc.

ST. HUBERT, Order of, a Bavarian order founded by Gerhardt V. in 1444, and which was originally named the Order of the Horn, so called from the hunting horns of which the links of chain were made. The membership was composed of the nobility, the number being unrestricted, while the number of members of lower rank was limited to 12. A white cross with eight points, on each of which is a small golden ball, constitutes the decoration. A crown surmounts the cross, while the arms of the cross are divided by three rays of gold representing Light from Heaven. On the medallion is pictured Saint Hubert's conversion, under which, on a red ribbon, is the inscription *In trav vast* (Firm in Faith).

ST. HYACINTHE, *sānt hī′a-sĭnth′* F. *săngt ē-â-săngt′*: city, cap. of St. Hyacinthe co., Quebec, Canada, on the Yamaska river, and on the Grand Trunk and the Canadian Pacific railroads; about 33 m. n.e. from Montreal. It is the see of a Rom. Cath. bp., and has a college, a convent, and a hospital. One tri-weekly, one semi-weekly, and three weekly papers are published in the French language. Among public buildings are the court-house, city hall, and cathedral. There are manufactures of boots and shoes, agricultural implements, and woolen goods; and the city has extensive trade. Pop. (1901) 9,210.

ST. IGNATIUS COLLEGE, a Roman Catholic institution located at Chicago, Ill. It was chartered in 1870, and is under the control of the Jesuits. It has a collegiate or classical, a commercial, and an academic department; religious instruction is a part of all courses. In the collegiate department the degrees of A.B., B.S., and Ph.B. are conferred; and the degrees A.M. and Ph.D. for graduate work. Though the College is designed especially for Roman Catholic students, non-Catholics are admitted. The library contained 30,000 volumes in 1903, including a select library for the special use of undergraduates; there are also a good scientific laboratory equipment and valuable mineralogical and zoological museums. There are no dormitories. The College has no endowment, and is dependent mainly upon its tuition fees for income; in 1903 the income was over $13,100; the students numbered 500, and the faculty 36.

ST. IVES, *īvz*, England, seaport and watering resort, in Cornwall on Saint Ives Bay, 57 miles southwest of Plymouth. The parish church of Saint Andrew is in the Early Perpendicular style of the 15th century. The town-hall, a free library and a new pier, are, besides the harbor, the chief features of interest. Pop. (1901) 6,697.

ST. IVES: see IVES, ST.

ST. JAMES'S PALACE: see JAMES'S ST., PALACE.

ST. JANUARIUS: see JANUARIUS, ST.

ST. JOHN: city, seaport and cap. of St. John Co., New Brunswick, Canada; on the Bay of Fundy, at the mouth of St. John river, and on Canadian Pacific, the Intercolonial and the Grand Southern railroads; 54 m. s. by e. of Fredericton, 450 m. from Boston; 275 m. from Halifax; and 480 m. from Montreal.

Situation.—It is picturesquely situated on a rocky peninsula that extends into the harbor; is laid out regularly with many streets hewn through 30 ft. or more of solid rock, paved with block and asphalt and is divided naturally into an upper and a lower town. With Carleton on the west side of the harbor, and Portland, a city annexed in 1889, S. J. covers an area of about 6,000 acres. A short distance above the city the river is spanned by a steel cantilever railroad bridge, completed 1886; and also a highway suspension bridge.

Public Works, Buildings, Etc.—The city is lighted with gas and electricity; is supplied with water from lakes, one of which is 8 miles distant; has an electric railway system, a splendid sewerage system and a grand harbor open the year round. The notable buildings are the city-hall, co. court-house, provincial lunatic asylum, marine hospital, city hospital, Rom. Cath. cathedral, opera-house, Acad. of Music, Mechanics' Institute, post-office, fine custom-house, public library, exhibition buildings, market house, Sailors' Home, Wiggins Orphan Asylum, Reformatory for Boys, Masonic and Odd Fellows' halls, Home for Aged Females, Protestant and Rom. Cath. orphan asylums.

1. Bridges and Falls.
2. The Reversible Falls.

Churches, Schools, Parks, Etc.—The city contains about 40 churches, the most notable of which are the Rom. Cath. cathedral, and Trinity Episcopal, Germain Street Baptist, Centenary Methodist and St. Andrew's Presbyterian churches. The public school system is non-sectarian. The city is well supplied with school buildings equipped with all modern educational appliances. There are also some private schools and commercial colleges. Fernhill Cemetery is interesting for its natural and romantic scenery. The Reversing Falls of the St. John river, at the head of a deep and winding gorge 15 feet deep and at one point but 500 feet wide, are curious, the waters reversing upstream, with the rise of the tide, which here attains 25 to 35 feet. Rockwood Park, within the limits of the city, is a favorite place of recreation. It covers an area of about 250 acres. The walks and drives are gracefully laid out, and the scenery is remarkably picturesque. The city also has two fine squares, King and Queen, situated between Charlotte and Sydney streets. To the e. of King Square lies the old burial ground where lie the remains of the Loyalist founders of the city.

Commerce and Industry.—S. J., owing to the depth of the harbor and its ample accommodations for a large number of vessels of any size, is one of the chief outlets for the products of the prairie region beyond Lake Superior. The entrance to the harbor is protected by Partridge Island, on which are a lighthouse and a quarantine hospital. There is also a breakwater at the entrance 2,250 ft. long. The shipments of lumber are large, as the St. John river and its tributaries flow through one of the greatest lumbering districts of the continent, and the situation of the city thus places it in command of that trade. There are now three elevators and berths for seven large steamships in connection with them, and other wharves are in course of construction. Steamship lines run to Bermuda, Barbadoes, Trinidad and Demarara; seven lines run to Great Britain during the winter and there is also steamboat connection with Yarmouth, Boston, Portland, Me., Digby, Grand Manan, Fredericton and other points along the coast and river. During 1903, 2,724 vessels of 1,299,299 tons entered or cleared at S. J. in the foreign trade, and 1,236 vessels of 687,742 in the coasting trade. The exports amount to about $25,000,000 annually. The industries include ship-building, lumbering, sea-fisheries, iron and brass foundries, saw-mills, nail factories, flour mills, broom and brush factory, rolling mills, and the manufacture of steam-engines, machinery, furniture, carriages and wagons, boots and shoes, cotton-goods, railroad rolling-stock, paper, lime, granite, cordage, and hats. There are seven chartered banks and three private banks in the city.

Government and Finance.—The government is vested in a mayor and a board of 15 aldermen, elected from the 13 wards into which the city is divided. The city and county sends six members to the Provincial House of Assembly and two to the Canadian House of Commons.

In 1905 the debt of the city was $4,366,508, and the assessed value of real and personal property $21,728,400.

History and Population.—The site of the present city was visited by Champlain and DeMonts in 1604, at that time a small Micmac Indian settlement being situated there. In 1630 the French under Charles de la Tour established a fort on the site and from 1643 to 1645 it was the scene of many destructive conflicts and much bloodshed. It was occupied intermittently until 1700 and then fell into ruin but in 1758 was taken by a force of Anglo-American troops and named Fort Frederick. The country was ceded to Great Britain by France in 1713 under the Treaty of Utrecht but the first permanent English settlement was not established until 1762 when Simonds, White and Hazen engaged in the manufacture of lime and in the fisheries at what is now Portland Point. The largest accession to its population was in 1783 when 10,000 American Loyalists, principally from the New England colonies, settled in the city. S. J. was incorporated as a city by royal charter in 1785, the charter being the oldest in Canada. A fire destroyed half the city, including almost the entire business portion (loss $10,000,000) 1877, June 20. It has since been substantially rebuilt, but its suburbs, Carleton, Portland, etc., have drawn from it much of its former population. Pop. (1871) 28,805; (1881) 26,127; (1891) 24,184; (1901) 40,711; (1907) about 50,000.

ST. JOHN, THE APOSTLE: see JOHN.

ST. JOHN, CHRISTIANS OF: see CHRISTIANS OF ST. JOHN.

ST. JOHN, CHARLES EDWARD, American physicist: b. Allen, Mich., 1857, March 15. He was graduated at the Michigan Normal College in 1876, and studied physics at Harvard and at the University of Berlin. He became instructor of physics at Michigan Normal College in 1885; was made associate professor at Oberlin College in 1897, and in 1899 became professor of physics and astronomy at that institution. He has written *Wave-Lengths of Electricity on Iron Wires* (1894); *A Study of Silphium Perfoliatum and Dipsacus Laciniatus in Regard to Insects* (1887).

ST. JOHN, FREDERICK EDWARD MOLYNEUX, Canadian journalist and author: b. Newcastle, England, 1838, Nov. 28. His father was one of Wellington's veterans at the battle of Waterloo, and the son followed him in a military career, on 1855, April 23, entering the Royal Marines (Light Infantry) as second lieutenant. He served under General Van Straubenzie throughout the operations against Canton in 1857–8, and acted with such gallantry under fire during the storming of the fort that in 1858, August, he was promoted first lieutenant. In 1868 he came to Canada and being a member of the staff of the Toronto *Globe* was appointed in 1870 to accompany Col. Wolseley's Red River expedition, and later served with Lord

Dufferin on his tour of British Columbia. Upon the forming of the Northwest Territories, he became the first clerk of the Legislature, the first secretary of the Protestant Board of Education and later was appointed sheriff and Indian commissioner. In 1879 he returned to England, where in 1884 he became the first emigration agent and London secretary to the Canadian Pacific Railway. He was at different times editor of the Winnipeg *Standard*, the Montreal *Herald*, and the Manitoba *Free Press*, and in 1888 was president of the Ottawa Press Gallery. He has published: *A Sea of Mountains*, an account of Lord Dufferin's tour (1877); and *Under the Mistletoe*, a society play.

ST. JOHN, Henry. See Bolingbroke, Viscount.

ST. JOHN, James Augustus, English author and traveler: b. Carmarthenshire, Wales, 1801, Sept. 24; d. London, 1875, Sept. 22. At 16 he went to London and engaged in newspaper work, and in 1827 started the *Weekly Review*. He lived much of his life abroad, in France, Switzerland, Egypt, and elsewhere, and found material in his travels for many of his works. He contributed to *Constable's Miscellany* in 1830 a *Journal of a Residence in Normandy* and wrote *Egypt and Mohammed Ali* (1834); *Anatomy of Society* (1831); *Manners and Customs of Ancient Greece* (1842); *Egypt and Nubia* (1845); *Views in the Eastern Archipelago* (1847); *Isis, an Egyptian Pilgrimage* (1853); *Philosophy at the Foot of the Cross* (1854); *Nemesis of Power* (1854); *Preaching of Christ* (1856). He also wrote *Lives of Celebrated Travelers* (1831), a biography of *Louis Napoleon* (1857), and an elaborate *Life of Sir Walter Raleigh* (1868–9). Besides these he published several novels and contributed political editorials to the *Daily Telegraph*.

ST. JOHN, John Pierce, American politician: b. Brookville, Ind., 1833, Feb. 25. He entered the Union army and served as captain and lieutenant-colonel. Removing to Kansas after the Civil War he was elected to the senate of that State in 1872 and was governor 1879–83. He was a candidate for President of the United States on the Prohibition ticket in 1884, and later became an independent in politics.

ST. JOHN, Percy Bolingbroke, English journalist: b. Plymouth 1821, March 4; d. London, 1889, March 15. He was the son of James Augustus Saint John (q.v.), whom he accompanied on his travels, and began early to write. Among his books are: *Young Naturalists' Book of Birds* (1838); *Our Holiday; a Week in Paris* (1854); *Lobster Salad* (1855); *Snow Ship* (1867), embracing adventures of Canadian emigrants; *The Young Buccaneer* (1873); *The North Pole* (1875), being stories of Arctic explorations; *Polar Crusoes* (1876); *The Sailor Crusoe* (1876).

ST. JOHN, Sir Spencer, English diplomat, son of J. A. St. John (q.v.): b. London, 1825, Dec. 22. In 1848

he was appointed secretary to Sir James Brooke in Borneo, in 1850 became secretary to the mission to Siam, and during 1855–61 was consul-general in Borneo. In 1861 he was transferred to Haiti as *chargé d'affaires* and consul-general, and in 1872 became minister-resident and consul-general. In 1874 he was appointed to a similar post at Lima and in 1875 executed a special mission to Bolivia, and another to Mexico in 1883, the latter being to negotiate for the resumption of diplomatic relations. In 1884 he became envoy extraordinary and minister plenipotentiary to Mexico; but in 1893 was transferred to Stockholm, and retired from the diplomatic service in 1896. He was knighted in 1881. He has published *Life in the Forests of the Far East* (1862): *Life of Sir James Brooke, Rajah of Sarawak* (1878); *Hayti, or the Black Republic* (1885); *Rajah Brooke* (1899).

ST. JOHN, one of the Virgin Islands, Danish West Indies, lying east of Saint Thomas (q.v.); area 21 square miles. It is of volcanic origin and hilly; only a small portion of the land is cultivated; sugar is the chief agricultural product. Cattle are raised and exported, and bay rum is also exported. Coral Bay, on the east coast, is one of the best sheltered and safest harbors of refuge during hurricanes in the Antilles. The island was included in the treaty of 1902 for the purchase of the Danish West Indies by the United States, which was rejected by the Danish Folkething. Pop. 925. See WEST INDIES, DANISH.

ST. JOHN, LAKE, Canada, in the Chicoutimi district, Quebec, 200 miles by rail north of Quebec, a circular body of water, about 28 miles long and 25 miles broad, drained by the Saguenay River (q.v.). It receives the waters of the Metabetchouan, the Mistassini, the Peribonca, the Ashuapmouchouan, the Ouiatchouan, and several smaller streams, and is noted for the grandeur of its scenery, for the angling facilities its waters and tributaries afford, and the big game to be found in the surrounding forests. A government steamer plies on the lake during the summer season and Roberval, Chambord Junction, Metabetchouan, near its picturesque falls, and Saint Gideon are settlements and railway stations on its shores.

ST. JOHN, *sānt jŏn*, RIVER; called by the Indians Looshtook (Long River): river in New Brunswick famous for beautiful scenery. It rises in Me., near the source of the Penobscot, flows n.e. and s.e., and empties into the Bay of Fundy. It is known as the Walloostook in its upper part, and for about 120 m. forms the boundary between Me. and the British possessions; 225 m. of the lower river are wholly in British territory. Its entire length is over 450 m., and it is navigable 225 m. from its mouth for steamers of light draught; steamers of 120 tons can go to Fredericton, 84 m. from its mouth. It furnishes fine waterpower.

ST. JOHN OF JERUSALEM.

ST. JOHN OF JERU'SALEM, KNIGHTS OF THE ORDER OF: otherwise called KNIGHTS OF RHODES, and afterward KNIGHTS OF MALTA: the most celebrated of all the military and religious orders of the middle ages. It originated 1048 in a hospital dedicated to St. John the Baptist, which some merchants of Amalfi were permitted by the caliph of Egypt to build for reception of the pilgrims from Europe who visited the Holy Sepulchre. The nurses were known at first as the Hospitaller Brothers of St. John the Baptist of Jerusalem. The Seljuk Turks, who succeeded the Egyptian and Arabian Saracens in Palestine, plundered the hospice; and on the conquest of Jerusalem by the crusaders under Geoffroy de Bouillon 1099, the first superior, Gérard, was found in prison. Released from durance, he resumed his duties in the hospice, gave material aid to the sick and wounded, and was joined by several of the crusaders, who devoted themselves to the service of the poor pilgrims. By advice of Gérard, the brethren took vows of poverty, chastity, and obedience before the Patriarch of Jerusalem. Pope Pascal II. gave his sanction to the institution 1113. Raymond du Puy, successor of Gérard in the office of superior, drew up a body of statutes for the order, which was confirmed by Pope Calixtus II. To the former obligations was afterward added that of fighting against the infidels and defending the Holy Sepulchre. Various hospices, called *commanderies,* were established in different maritime towns of Europe as resting-places for pilgrims, who were there provided with the means of setting out for Palestine. The order having become military as well as religious was recruited by persons of high rank and influence, and wealth flowed in on it from all quarters. On the conquest of Jerusalem by Saladin 1187, the Hospitallers retired to Margat in Phœnicia, whence the progress of infidel arms drove them first, 1285, to Acre; afterward, 1291, to Limisso, where Henry II., King of Cyprus, assigned them a residence. By the statutes of Raymond, the brethren consisted of three classes, Knights, Chaplains, and Serving Brothers; these last being fighting squires, who followed the knights in their expeditions. The order was subsequently divided into eight languages —Provence, Auvergne, France, Italy, Aragon, England, Germany, and Castile. Each nation possessed several Grand Priories, under which were a number of commanderies. The chief establishment in England was the priory at Clerkenwell, whose head had a seat in the upper house of parliament, and was styled First Baron of England.

In 1310 the knights, under their grand-master Foulkes de Villaret, in conjunction with a party of crusaders from Italy, captured Rhodes and seven adjacent islands from the Greek and Saracen pirates, and carried on thence a successful war against the Saracens. In 1523 they were compelled to surrender Rhodes to Sultan Solyman, and retired first to Candia and afterward to Viterbo. In 1530

Charles V. assigned them the island of Malta, with Tripoli and Gozo (see MALTA). The knights continued for some time to be a powerful bulwark against the Turks; but after the Reformation a moral degeneracy overspread the order, and it rapidly declined in political importance; and in 1798, through the treachery of some French knights and the cowardice of the grand-master, D'Hompesch, Malta was surrendered to the French. The lands still remaining to the order were also about this time confiscated in almost all the European states; but though extinct as a sovereign body, the order has had in the 19th c. a lingering existence in parts of Italy, in Russia, and in Spain. Since 1801 the office of grand-master has not been filled: a deputy grand-master has instead been appointed, who has his residence in Spain. The order at first wore a long black habit, with a pointed hood, adorned with a cross of white silk of the form called Maltese on the left breast, as also a golden cross in the middle of the breast. In their military capacity, they wore red surcoats with the silver cross before and behind. The badge worn by all the Knights is a Maltese cross, enamelled white, and edged with gold; it is suspended by a black ribbon, and the embellishments attached to it differ in different countries.

SAINT JOHNS: Mich., village, county-seat of Clinton co., on the Detroit, Grand Haven & Milwaukee railroad; about 20 m. n. of Lansing and 100 miles w.n.w. of Detroit. It is in an agricultural region and it has considerable manufacturing interests. The chief manufactories are a large table factory, grist mills, lumber mills, carriage works, machine shop, and foundry. There is considerable trade in manufactures and farm products. The three banks have a combined capital of $185,000. The educational institutions are a high school, public graded school, and a library, which is under the auspices of the Ladies' Library Association. Pop. (1910) 3,500.

SAINT JOHN'S: Newfoundland, the capital of the colony, is the extreme eastern seaport of North America, and the nearest in America to Europe. Its well-protected harbor is small but capable of accommodating vessels of deep draft. It is strongly fortified. The entrance to the harbor, called the Narrows, is about 600 feet wide at the narrowest point. To the north of the Narrows is Signal Hill, 510 feet above sea-level, and to the south South Side Hill, nearly 700 feet. At the foot of the latter is Fort Amherst lighthouse. A fire in 1892 nearly destroyed the town, which was quickly rebuilt in a solid manner. The principal buildings are the custom-house, post-office, government offices, lunatic asylum hospital, a Roman Catholic cathedral, and the Anglican cathedral. The institutions for higher education include Anglican, Methodist, Presbyterian, and Roman Catholic colleges, several literary institutes and libraries. The town of Portland, adjacent, forms with Saint John's virtually one city. The chief

1. House of Assembly, Parliament House.

2. Governor's Residence.

industries are connected with fisheries, ship-building, and timber. There are iron foundries and various manufactures, including tobacco, furniture, cables, ropes, twines, nets, seines, etc. The export trade in fish, oil, and seal skins is considerable. The city is supplied with electricity and other modern improvements. Pop. (1900) 30,486.

SAINT JOHNS: Quebec, a town, the county-seat of Saint Johns co., situated on the Richelieu river, 27 m. s.e. of Montreal. It is a port of entry and a station on the Grand Trunk, Canadian Pacific, and Central Vermont railroads. The principal manufactures are earthenware and silk goods. Large quantities of lumber and agricultural products from the lower Champlain region are exported through Saint Johns, the exports amounting to nearly $3,000,000 annually. Pop. (1901) 4,030.

ST. JOHN'S: city of the West Indies, capital of the island of Antigua, and residence of the governor-in-chief of the Leeward Islands; at the w. side of Antigua, close to the shore. The town is well laid out, having spacious streets, of which the principal run e. and w., being so arranged to obtain advantage of the refreshing easterly or trade winds which prevail here from Apr. to Aug. The harbor is comparatively shallow, and there is a bar across its mouth, so that vessels heavily laden are obliged to anchor outside. The cathedral, the court-house, and the new market-house, are the chief edifices. Water is scarce and in long dry seasons the inhabitants suffer greatly from want of it. Wells have been sunk in the town, but the water obtained is brackish, so that rain-water collected in iron and other cisterns forms the only supply. The maximum heat is 96°; the minimum 62°. The average fall of rain is said to be 45 inches. Pop. 9,300.

SAINT JOHNS: a river in Florida; the source, Lake Poinsett in Orange co., is about 12 m. from the Atlantic Ocean. The river flows north, nearly parallel with the coast, and enters the Atlantic about 15 m. n.e. of Jacksonville. The total length is about 350 m. It flows through swamps, ponds, and lakes; luxuriant vegetation is along its banks the greater part of the course. In some places are large trees, their green foliage intermingled with feathery brown and gray mosses which hang down to the ground. Reptiles are numerous in the marshes. In the north part of its course the land is higher and dryer. It is navigable to Enterprise in Volusia co.

SAINT JOHN'S COLLEGE: Cambridge, England; was founded by Margaret, countess of Richmond and Derby, mother of King Henry VII., in 1511, mainly through the exertions of Fisher, bishop of Rochester, then chancellor of the university, who raised sufficient funds to endow 32 fellowships. The college replaced Saint John's Hospital founded in the 12th c., and now consists of a master, at least 56 fellows, 60 foundation scholars, and nine sizars; both fellowships and scholarships being open

to all British subjects. Five fellowships are professorial fellowships, to be held by professors of the university. There are three divinity studentships of the value of about $400, tenable for three years, and open to the competition of Bachelors of Arts not of sufficient standing to take the degree of M.A.; also four law studentships of the value of $450, tenable for four years; and a Hebrew scholarship of the value of $160, tenable for three years. Some $33,500 are expended annually in assisting deserving students of the college, and there are a number of prizes which are awarded on the results of the annual examinations. The college has the patronage of 52 church livings. The buildings include four courts chiefly of brick; the new court (1826) across the Cam, built of stone, is united by an ornamental covered bridge, commonly called the 'bridge of sighs,' with the third court. The chapel (1869) is by Sir Gilbert Scott, and is a fine specimen of the Early Decorated style. The combination-room, 93 feet long, and the library (1623), are curious and striking. Ascham, Ben Jonson, Bentley, Rowland Hill, Wilberforce, Wordsworth and Lord Palmerston were members of the college.

SAINT JOHN'S COLLEGE: Oxford, England, a college founded in 1555 by Sir Thomas White, a London alderman, for a president, 50 fellows and scholars, a chaplain, an organist, six singing men, eight choristers, and two sextons. Some of the buildings belong to the earlier college of Saint Bernard dating from about the middle of the 15th c. With buildings added at subsequent dates the whole form a picturesque group. Under the present statutes the college consists of: (1) Not less than 14 nor more than 18 fellowships, of which seven may be official fellowships, the rest tenable for seven years. To these may at future times be added two *ex-officio* fellowships to be held by the Laudian professor of Arabic and the professor of civil engineering. (2) Not less than 28 scholarships, of which six shall be open, 15 appropriated to Merchant Tailors' School, two to Coventry School, two to Bristol School, two to Reading School, and one to Tunbridge School. (3) Four senior scholarships confined to former pupils of Merchant Tailors' School. There are also the Holmes Scholarship, tenable for five years; the Lambe Scholarship, tenable for four years; the four Casberd scholarships of $400 each per annum, and certain exhibitions for undergraduates not on any foundation, and of at least one year's standing in the college. There are also four fellowships, tenable for 14 years, open with certain limitations and under certain conditions in respect of literary proficiency, first to the kindred of the founder, Dudley Fereday of Ettingshall Park, Stafford, secondly to natives of Staffordshire, and then to any other person whatsoever. Thirty-three church livings are in the patronage of the college.

SAINT JOHN'S COLLEGE: located at Annapolis, Md. It was chartered in 1784, and opened to students in 1789, but is the direct successor of King William's School (founded 1696), which in 1784 was merged into the college, thus being one of the oldest institutions of collegiate grade in the United States. The work of the collegiate department is arranged in four courses, classical, Latin-scientic, scientific, and mechanical engineering; in each course certain studies are required and others are elective. The degree of A.B. is conferred for the completion of the classical and Latin-scientific courses; the degree of B.S. for the scientific and mechanical engineering courses. Graduate work is provided for, leading to the degree of A.M., and there is a preparatory school. Instruction in military science and military drill are a part of the curriculum, required of all students. The state provides one full state scholarship for each senatorial district, and in addition 26 scholarships for tuition only, to be distributed among the counties in order of priority of application; there are also other scholarships. In 1904 the grounds and buildings were valued at over $250,000; Henry Williams Woodward Hall, the new science building, was erected in 1900; the library contains 8,200 volumes. The annual income is $55,000; the students number about 165, and the faculty 13.

SAINT JOHN'S COLLEGE: an institution in New York, opened 1841, July 24, under the auspices of the Roman Catholic Church. The land upon which the college stands is a part of the old Dutch village of Fordham, and is of historic interest. In 1639 the land between the Harlem and Bronx rivers was purchased by the Dutch West India Company, from three Indian sachems. In 1694 the land which is now the college property came into possession of the Corsa family. The farm was known as 'Rose Hill,' a name which still clings to the place and by which the college was known in earlier years. In 1787 the 'Rose Hill' farm was purchased by John Watts and later it passed through several owners to Horatio Shepherd Moat. In 1838 Moat built the stone house which is now the central college building, and which contains the principal offices and the reception room. In 1839 the new house and a farm of 80 acres was purchased by John Hughes, the coadjutor bishop of New York, for $29,750. John McCloskey was first president, and for the five years the college was in charge of secular priests, four clergymen, who afterward became bishops, three who became archbishops, and one a cardinal, were associated with its government or were members of the faculty. On Apr. 10, 1846, the Act of Incorporation was passed which made the school a university with power to grant all degrees usually granted by a university. In 1846 and 1860 the Fathers of the Society of Jesus bought the buildings and a portion of the 80-acre tract and took charge of the college. It still remains one of the Jesuit schools. The area of the college grounds is 70 acres,

bounded e. and s. by Bronx Park. The group of gray stone buildings presents an attractive and imposing appearance; the 1904 addition to the buildings, a hall built on the site of the 'Rose Hill Manor House' (1690), cost about $130,000.

The college includes four departments under the same management; the college department furnishes the usual four-year course leading to the degree of B.A.; the academic furnishes a four-year course and prepares for college; the commercial, and the preparatory departments. There are seven scholarships, which have been endowed by friends of the school who designed to aid worthy students. Social life as well as intellectual is fostered by the various college societies. The number of pupils in attendance is over 400. Some of the noted alumni are Archbishop Farley, of New York; Mgr. J. F. Mooney, vicar-general of New York; Bishop Hendricks, of Cebu, Philippine Islands; Morgan J. O'Brien, New York, and John T. McDonough, supreme court justice, Philippine Islands.

SAINT JOHN'S COLLEGE: located at Washington, D. C. It is the outgrowth of Saint Matthew's Institute, founded in 1870 by the Brothers of the Christian Schools (Roman Catholic); its name was changed to Saint John's Collegiate Institute in 1880, and to Saint John's College in 1887. The ideal of the college is to give a scientific and business education. There are three departments—collegiate, academic (secondary), and preparatory (elementary). The collegiate department offers two courses. English-science, leading to the degree of B.S., and commercial course, for completion of which a commercial diploma is granted. The English-science course includes instruction in French and German; drawing is taught in all three departments. The grounds and buildings in 1904 were valued at over $150,000; the library contained 5,000 volumes. The students in 1903-4 numbered 150, the faculty 12.

ST. JOHN'S, EVE OF: one of the most joyous festivals of Christendom during the middle ages; celebrated on midsummer eve. From the account of it by Jakob Grimm, in *Deutche Mythologie* (Bd. i., 583-593), it appears to have been observed with similar rites in all countries of Europe. Fires were kindled chiefly in the streets and market-places of the towns, as at Paris, Metz, etc.: sometimes, as at Gernsheim, district of Mainz, they were blessed by the parish-priest, and prayer and praise offered until they had burned out; but usually they were secular in character, and conducted by the laity. The young people leaped over the flames or threw flowers and garlands into them, with merry shoutings; songs and dances were also a frequent accompaniment. Till a comparatively late period, the very highest personages took part in these festivities. In England (see R. Chambers's *Book of Days*, June 24) the people on the Eve of St.

John's were accustomed to go into the woods and break down branches of trees, which they brought to their homes, and planted over their doors, amid great demonstrations of joy, to make good the prophecy respecting the Baptist, that many should rejoice in his birth. This custom was universal in England till the recent change in manners. Some of the superstitious notions connected with St. John's Eve are highly fanciful. The Irish believe that the souls of all people on this night leave their bodies, and wander to the place, by land or sea, where death shall finally separate them from the tenement of clay. It is not improbable that this notion was originally universal, and was the cause of the widespread custom of watching or sitting up awake on St. John's night, for there might naturally be a general wish to prevent the soul from going on that dismal ramble. In England, perhaps in other countries also, it was believed that, if any one sat up fasting all night in the church porch, he would see the spirits of those who were to die in the parish during the ensuing twelve months come and knock at the church door, in the order and succession in which they were to die. The above particulars from the *Book of Days*—the kindling of the fire, the leaping over or through the flames, and the flower-garlands, clearly show that these rites are essentially of heathen origin, and of sacrificial character. They are obviously connected with the worship of the sun, and were doubtless practiced long before John the Baptist was born. In old heathen times, Midsummer and Yule, the summer and winter solstices were the two greatest and most widespread festivals in Europe. The church, deeming itself unable to abolish these, changed their names, and tried to find something in the history of Christianity that would justify the alteration—a doubtful experiment, scarcely justified by results.

SAINT JOHN'S-WORT: a large genus (*Hypericum*) of plants of the family *Hypericaceæ*. They are to be found nearly everywhere in the temperate and torrid zones, and are often shrubs or small trees. The foliage is pellucid punctate or black-dotted, and the leaves and blossoms emit, when bruised, a strong, resinous-aromatic odor, and have a bitter taste, due to an oil possessing astringent and tonic properties, and which held a prominent place in old pharmacopœias. The flowers are perfect and fivemerous, borne solitary or in cymose panicles, and are generally yellow. *Hypericum perforatum*, to which formerly the name of Saint John's-wort was limited, has its leaves marked with pellucid dots, somewhat simulating perforations. It is a European plant which has become naturalized in our country, and is a troublesome weed. It is a very smooth, shining herb, sometimes 2 ft. high, with opposite oblong leaves, and bright-yellow flowers in broad terminal cymes. Both petals and leaves are black-dotted. Its yellow, acrid resinous juice will stain the skin purple, and was be-

lieved by Dr. Torrey to cause inflammatory trouble in cattle. The dried plant dyed wool yellow.

Tradition states that the Saint John's-wort was so called because blood-like spots appeared on its foliage immediately after the Saint was beheaded, and re-appeared on the anniversary of the date. It was regarded as a universal panacea, and perhaps possessed some curative qualities, especially in external use. It was supposed to preserve persons and property against lightning, but was still more in demand as a preventive of witch-visits, or those of other evil spirits, perhaps because, according to tradition, a baptized person anointing the eyes with the green juice of its inner bark could see witches. Italians gave it the name of 'devil-chaser.' It was not only worn as an amulet, but was hung over doors and windows; yet it was not safe to tread on it after dark, since the luckless wight that bruised it might be snatched up on a fairy horse and carried about all night; Saint John's-wort, plucked on midsummer night's eve took its place among the love-charms.

SAINT JOHNS'BURY: town, county-seat of Caledonia co., Vt., on the Passumpsic river, and on the Boston and M. and the Saint Johnsbury and L. C. railroads; about 34 m. e.n.e. of Montpelier. It was settled in 1786 by Jonathan Arnold; and incorporated in 1884. It is in an agricultural region in which there is considerable attention given to dairying; but the principal industry is the manufacturing of the Fairbanks scales. There are about 1,000 men employed in the Fairbanks Scales Works, and an equal number in the combined smaller manufactories. There are nine churches and one hospital. The educational institutions are the Saint Johnsbury Academy, Notre Dame Academy, public and parish schools, Saint Johnsbury Athenæum and a free library, and the Fairbanks Museum of Natural History. The four banks have a combined capital and deposits of $2,000,000. The government is vested in a board of trustees. Pop. (1900) 5,666; (1910) 8,098.

SAINT JOSEPH: city, county-seat of Berrien co., Mich., on Lake Michigan, at the mouth of the Saint Joseph river, about 2 m. s. of Benton Harbor and 23 m. n. by w. of Niles. It has a steamer connection with the Lake Michigan ports. It is in an agricultural region, noted especially for its peaches and other fruit. The chief industrial establishments are flour and grist mills, lumber mills, fruit-basket and box factories, machine shops, lumber mills. In the government census of 1900 there are given 75 manufacturing establishments, with 933 employees. The annual value of the products was $1,308,277. There is an extensive trade in peaches, apples, and lumber. The two state banks have a combined capital of $50,000. The educational institutions are a high school, public elementary schools, and a public library. Pop. (1900) 5,155; (1910) 5,936.

THE HIGH SCHOOL, ST. JOSEPH, MO.

SAINT JOSEPH.

SAINT JOSEPH: city and county-seat of Buchanan co., Mo.; the third city in size and wealth in Missouri, and located on its western border on the e. bank of the Missouri river, 131 m. s.e. of Omaha.

History.—In 1826, Joseph Robidoux, born in Saint Louis of French parentage, established a trading post at this point known as the 'Blacksnake Hills,' and thus became the founder of the city, which he later christened with his own name. For hundreds of miles on every side, the whole country was then an unbroken wilderness, inhabited only by the aborigines, who gained a scanty subsistence by trapping and hunting. The furs and pelts of the wild animals they killed soon became a source of extensive traffic between the trader and his Indian neighbors. The famous 'Platte Purchase' was accomplished through a treaty with the Indians, dated Sep. 17, 1836. The trading post grew into a town, incorporated in 1845, and then into a city, incorporated in 1851. Its growth at first was not rapid, but steady and gradual. Planted, however, in the midst of one of the finest and wealthiest agricultural sections of the United States, and drawing to itself the larger part of the trade that came from the country to the westward, it later on began to assume a more vigorous and rapid growth. In 1880 it had a population of 32,431; (1890) 52,324; (1900) 102,979; (1910) 77,403.

Trade.—The development and extension of the business and material resources of the city kept pace with its increase in population. As a distributing point for the entire west, from the Mississippi river to the Pacific ocean, it has but few rivals, and, outside of Saint Louis and San Francisco, no superiors. The volume of the jobbing business of the city for a year exceeds $65,000,000, and the manufacturing output over $25,000,000. This is exclusive of the retail trade, which is correspondingly large. A great impetus was given to the growth and prosperity of the city by the improvements and extensions made at the stock yards located at this point, which were begun in the year 1897, and which have been carried on extensively ever since.

Railroads.—Saint Joseph has 38 m. of electric street railway, with an extensive electric plant connected therewith, to furnish the motive power for its operation. The equipment of cars, both in number and perfection of construction, is such as to satisfy the demands of street railway travel. The city is connected with the outside world by nine railroads, including one in course of construction in 1903. Three lines run to Chicago, three to Kansas City, two to Saint Louis, two to Omaha, one to a connection with the Union Pacific railroad at Grand Island, Neb., and two others traverse that vast territory lying to the west and southwest. Most of them use the Union Station, erected in 1896 at a cost of $126,000. Two of the railroads centering in the city cross the railroad, wagon and foot bridge, which spans the Mis-

souri river at this point, built by the city in 1872 at a cost of $716,000.

Government.—Saint Joseph is governed by a mayor, elected for two years, who is the chief executive officer of the city, and by a common council, entrusted with the enactment of all municipal legislation, whose members are elected for four years, one member from each ward of the city, but chosen by the voters of the whole city, the terms of one half expiring every two years. The city has also a board of public works, charged with originating and recommending to the council all ordinances for the improvement of the streets and other public works, and superintending the construction thereof. This board is appointed by the mayor, comptroller and auditor, not more than two members of which can belong to the same political party. There is also a board of park commissioners, to which is committed the custody, improvement and management of the parks, and a board of police commissioners, appointed by the governor, which has charge of the selection and control of the police force and the enforcement of the police regulations. The public schools are controlled by a school board consisting of six members, one half chosen from each of the two leading political parties, so as to free the management of the schools as much as possible from partisan bias. They serve without pay, and their terms of office are so arranged that two of them expire every two years. The fire department, under the control of the mayor and council, consists of a chief, his assistant, and 70 firemen, located in 12 fire-houses, distributed throughout the city, and equipped with all the engines, hose, ladders, and other appliances needed for extinguishing fires.

SAINT JUST, *săng zhüst'*, Louis Antoine de: notable figure in the first French Revolution: 1767, Aug. 25—1794, July 28; b. Decize, in Nivernais. He was educated at Soissons by the Oratorians, and after a youth of unpromising turbulence, went to Rheims to study law, but soon returned to his native village, where he applied himself to literature. When the revolution broke out, Saint Just was transported with enthusiasm, and became one of its most ardent apostles. Probably no man in France was a more fanatical believer in the brilliant delusions of the period. Spotless, even austere, in his morals—as though in reaction from his former ill-behavior—reserved in manner but eloquent in speech, and rigorously earnest in his convictions, he rapidly rose into consideration in his native commune. In 1791, appeared his *Esprit de la Revolution et de la Constitution de la France,* in which the various causes of the Revolution are sketched; and in the following year he was chosen deputy to the convention by the electors of Aisne. Saint Just entered Paris Sep. 18, fifteen days after the frightful massacres, which Lamartine in his *Histoire des Girondins* with melodramatic inaccuracy,

ST. JOSEPH IN 1850.

represents him as ordering in conjunction with Robespierre. He voted for the death of the king, and in an oration full of stern but exaggerated republican sentiment, gave his 'reasons.' This speech made him famous. The Girondins tried in vain to win him. He showed great capacity for administrative organization, and 1793, Feb. 11, carried his project for the formation of a committee to superintend the war. After the fall of the Girondins in June (Saint Just took no part in their overthrow, and never once spoke in debate during the disastrous struggle between the two sections), the civil war broke out; and from this point began that merciless republicanism which fitted him to be the associate of Robespierre. Saint Just—perhaps because so young—has often been deemed merely an instrument in the hands of Robespierre; but the known facts of his career utterly disprove this; and some writers have not scrupled to make Saint Just the real head of the extreme party which exercised government in France during the *Reign of Terror*. Almost all the energetic and sanguinary measures to repress the royalists and timid republicans at home, and to repel the forces of the allied monarchs on the frontier—urging on the French generals the alternative of attacking and winning victories or of being summoned to trial before the revolutionary tribunal—were devised by him. Feb. 19 he was elected president of the convention. He drew up the terrible report which led to the arrest and execution of Herbert Danton, and their adherents. Saint Just had no scruples in cutting off his opponents: the fanatical intensity of his convictions rendered him indifferent to cruelty, however appalling. When the political reaction set in, and the party of moderation had got the upper hand in the convention, Robespierre and Saint Just were seized and imprisoned 1794, July 27, and ordered to be guillotined next day. Saint Just suffered with sullen calmness—not a word escaping his lips. See Ernest Hamel's *Histoire de St. Just* (Par. 1859).

ST. KIL'DA (island). See KILDA, ST.

ST. KITTS (island). See CHRISTOPHER'S, ST.

ST. LAWRENCE, *sānt law'rens*, GULF OF: western inlet of the n. Atlantic, extending to all the British provinces of eastern N. America—Newfoundland, Canada, New Brunswick, Nova Scotia, and Prince Edward's Island. It has three communications with the ocean—the Strait of Belle Isle, between Newfoundland and Labrador; the Gut of Canso, between the island of Cape Breton and the peninsula of Nova Scotia; and a far wider passage than either, with the island of St. Paul in the middle, between Cape Breton and Newfoundland: while in the opposite direction it narrows, at the w. end of Anticosti, into the estuary of the mighty river, to which the Gulf has gradually extended its own name. Besides the islands Anticosti, St. Paul, and Prince Ed-

ward's, above mentioned, this arm of the sea contains very many clusters of islands—particularly in its southern half, the Magdalens and the Birds; these islands all being dangerous to shipping by reason of the thick fogs and uncertain currents. The Gulf of St. Lawrence is noted for the productiveness of its fisheries; but it is best known as a channel of traffic, connecting the busiest thoroughfares of maritime trade with one of the most extensive systems of inland navigation in the world.

ST. LAW'RENCE, River: immense water-course in northern N. America; constituting, with the lakes which it forms, by far the largest body of fresh water in the world. Including the lakes and streams which it comprises in its widest acceptation, it covers, by the lowest estimate, 73,000 sq.m.; and as nearly the whole of this area averages considerably more than 600 ft. in depth of water, the aggregate cannot represent less than 9,000 cubic m.—a mass of water which would take more than 40 years to pour over the Falls of Niagara, at the computed rate of a million cubic ft. in a second. As the entire basin of this water-system is less than 300,000 sq.m., the surface of the land is only about three times that of the water.

This mighty artery of northeast America rises, under the name of the St. Louis, on the spacious plateau which sends forth also the Mississippi toward the Gulf of Mexico, and the Red River of the North toward Hudson's Bay—all three being said, in wet seasons, occasionally to mingle their floods. Lake Superior, the next link in the chain, finds its way to Lake Huron through the rapids of St. Mary, which are passed by a ship-canal on the right, or American side. Below Lake Huron, which receives Lake Michigan from the s., the river St. Clair, Lake St. Clair, the river Detroit, and Lake Erie maintain nearly the same level, till the river Niagara descends 334 ft. to Lake Ontario, which is itself still 230 ft. above sea level. From this, the last of the connected series of inland seas, issues the St. Lawrence proper, which, with a few comparatively small expansions, presents the character first of a river, then of an estuary, down to the gulf. Between Lake Ontario and the city of Montreal, which marks the head of navigation from the sea, are various cataracts or rapids, which, besides having been gradually ascertained to be more or less passable by vessels, may all be avoided by means of canals on the British side. At about two-thirds of the distance from Lake Ontario to the city of Montreal, the intersection of the parallel of 45° determines the point where the St. Lawrence, after having been an international boundary from the head, or nearly so, of Lake Superior, becomes exclusively Canadian. At Quebec, nearly 400 m. from Lake Ontario, it steadily widens into an estuary of about the same length. The entire length, including the chain of lakes, is about 2,200 m.; of which about

LACHINE RAPIDS, ST. LAWRENCE RIVER.

one-fourth may be assigned to the St. Lawrence proper. In connection with the improvements on itself and its affluents, the St. Lawrence offers to sea-going ships the noblest system of inland navigation in the world, embracing a continuous line of about 2,000 m.: its advantages, however, are materially impaired by the severity of the climate, which binds it in the chains of winter at least five months in the year.

SAINT LAWRENCE UNIVERSITY: located at Canton, N. Y. It was chartered in April, 1856; the theological school was opened in 1858, the collegiate department in 1859; a preparatory school also was organized, but was discontinued in 1864. The collegiate department is unsectarian, the theological school is Universalist; the two institutions are under the control of one board of trustees, but the seminary has a separate building, faculty, and funds. From 1869 to 1872 a law school was conducted, and in November, 1903, a Law Department was again established by the incorporation of the Brooklyn Law School as an integral part of the university under the name of the Brooklyn Law School of Saint Lawrence University. The university, therefore, consists of three departments: (1) the college of letters and science; (2) the theological school; (3) the law school. Thirty scholarships are provided. The main departments of study in the theological school are ethics, history, theology, comparative religions, homiletics, sociology, church administration, psychology, and interpretation and criticism; the full course occupies four years. In the law school the two years' course of study leads to the degree of LL.B., the three years' course to the degree of LL.M. All departments of the university are open to women. The buildings on the Canton campus include the main building, the Herring Library, the Cole Reading Room, the gymnasium, and the seminary building. The library contains 20,000 volumes; the productive funds amounted to $400,000. The students number 180 in the college, and 350 in all departments.

SAINT LEGER, *sānt lĕj'ėr* or *sĭl'ĭn-jėr*, BARRY: British soldier: 1737-1789. He served in the siege of Louisburg in 1758, and under Wolfe at Quebec, and checked the flight of the French forces at the Heights of Abraham. He was also the leader of the expedition against Fort Stanwix in the American Revolution. At the close of his career in the British army, in 1784, he was commandant of the royal forces in Canada. His *Journal of Occurrences in America* was published in London in 1780.

ST. LOUIS, *sānt lō'ĭs:* city, port of delivery, and since 1875 a jurisdiction separate from St. Louis co., Mo.; on the w. bank of the Mississippi river, 20 m. below the mouth of the Missouri, 190 m. above the mouth of the Ohio, 1,063 m. w. of New York, 1,150 m. n. of New Orleans; 62½ sq.m.; ranking in pop. among U. S. cities

sixth (1880), and fourth (1910). It is the metropolis of Missouri, and also of all that country which lies w. of the Mississippi, and contains a population, 1910, of 687,029.

History.—The place was founded in 1763 by Pierre Laclede Liguest, who, having secured a liberal trading charter from the French government, engaged a company of 75 men and in a 40-ton Mackinaw boat, loaded with provisions, poled and cordelled his heavy craft up the river from New Orleans, in search of a suitable location for establishing a headquarters for the fur trade, in which he had decided to engage. The site selected for his purpose was opposite the French village of Cahokia, in Illinois, a settlement established a few years before, and now merged with East St. Louis. Laclede, as he is best known in local history, gave the name of St. Louis to the station in honor of Louis IX., who, as a valorous crusader of the 13th century, was canonized by the church. Arriving at the point where he had decided to make a settlement late in November, 1763, it was not until February of the following year that Laclede began the building of a storehouse, and quarters for his family, consisting of a wife and two sons. Temporary shelters were succeeded by a stone mansion and several log huts, all located back of what was at the time a bluff, in a space that is now bounded by Main, Second, Walnut and Market streets. The settlement grew so rapidly that the French government made it a military post in 1765, and occupied it with a company of soldiers commanded by General St. Ange de Belle Rive. The erection of barracks was preceded by the building of a dirt and brush fort, the soldiers being meantime quartered with Laclede under whose stone house was a cellar that afforded ample shelter. In 1768 the second stone house was erected, which, being the largest in the place, was made the colonial capitol of Upper Louisiana. It was upon the porch of this house that took place, in 1804, Mar. 9, the ceremonies attending the transfer of all of Louisiana territory, from Spain to France and immediately after from France to the United States. These retrocessions were due to the fact that by a secret treaty Louis X. in 1763, ceded to Spain all that territory lying west of the Mississippi, and by another secret treaty, in 1800, Spain reconveyed all the territory known as Upper Louisiana, back to France, but the people being ignorant of these conveyances, the village of St. Louis remained under Spanish control until, in 1803, France (Napoleon), by what is known as the Louisiana Purchase treaty, sold all of Upper Louisiana to the United States.

In May, 1780, St. Louis, which at the time was protected by a fort made of palisades and dirt, was attacked by a force of 1,500 Indians, composed of Ojibways, Winnebagoes, and Sioux, who, by landing 3 m. above the fort, made a wide detour, with the view

of surprising the village by attacking from the rear. Their plans were betrayed by some women and children who were gathering strawberries, who fled screaming to the protection of the stockade. The Indians, feeling secure in their numbers, resolutely pursued the fleeing berry-pickers up to the very gate of the fortress and with much shouting and shooting attempted to force an entrance. The garrison at the time consisted of a body of militia from St. Genevieve, who instead of making a defense abjectedly fled and concealed themselves, without firing a shot. Thereupon citizens manned the two cannons in the fort while others seized guns and pistols with which they gave battle so resolutely that the Indians were driven off. After the fight it was discovered that 27 persons had been killed, nearly all women and children, whose terribly mutilated bodies were found scattered over the ground for a distance of three miles. In order to protect the village against attacks thereafter, the new commandant, Cruzat, built six stone forts, circular in shape, 50 ft. in diameter and 28 ft. high, connected by a heavy stockade pierced with loopholes for small arms. These protections gave immunity from Indian attacks and there followed a rapid growth of the town, so that in 1799 the population of St. Louis numbered 925, and the town limits embraced nearly one-half mile square of territory. At the time of the transfer there were 180 residences, generally log houses, and the town enjoyed a lucrative trade, in which furs and lead were almost exclusively the articles dealt in. It was from St. Louis that Lewis and Clark, in 1804, outfitted and started upon their journey of exploration across the continent, to which city they returned from their successful trip 1806, Sep. 23. It was also from St. Louis that Lieut. Zebulon Pike started upon his expeditions to the north, 1805, Aug. 9, and to the far west, 1806, July. Lieut. John C. Fremont, with 80 men, outfitted at St. Louis in the spring of 1842 for his transcontinental trip.

The first steamboat to reach St. Louis was the Zebulon Pike, 1817, Aug. 2, and the first railroad was the Ohio & Mississippi, which extended its line from Cincinnati, reaching St. Louis in 1849. The Missouri Pacific railroad began building westward from St. Louis in 1851 and extended as far as Jefferson City in 1856, but was not completed to Kansas City (q.v.) until 1865.

St. Louis, though not involved in the actual conflict of the Civil War, was a base for all supplies forwarded to the Union Army operating in the west and southwest. An engagement without fatalities took place at Camp Jackson, about Twenty-ninth and Olive streets, which saved the arsenal from falling into the hands of the Confederates, and the city was put into a state of defense by General Fremont, who built a series of forts in the vicinity of La Fayette Park, and converted McDowell's College, a stone building (Eighth and Gratiot

streets), into a military prison. It was in south St. Louis (Carondelet) that James B. Eads built for the government a number of lightly armored gun boats that performed effective services in the sieges of Island No. 10, Columbus, Vicksburg, and other river strongholds, and were used for patrolling the Mississippi, Ohio, Tennessee, and Cumberland rivers. The Western Sanitary Commission was organized in St. Louis, 1861, that raised $4,000,000 for the benefit of Union soldiers. The sentiment of the city was divided between the north and south, but all active help was given to the Union, though negro slavery did not cease to exist in the city until the close of the war, 1865.

Situation.—The location of St. Louis is highly advantageous, situated a few miles below the mouth of the Missouri and Illinois rivers, on rising ground, underlaid with limestone, that affords perfect drainage, and above the miasma strata of the Mississippi bottoms. The city extends for a distance of 19 m. along the river, which has a width of 1,500 ft. at the Eads bridge. Though covering an area of nearly 62 sq.m., there is no section that is without good drainage, and having a superb sewage system, 620 m., and handsomely paved streets of granite, vitrified bricks, and asphalt, the health of the city compares favorably with that of the most favorable of the world, the annual death rate for 10 years averaging only 17.4 per 1,000. The river at St. Louis has a maximum rise above ordinary stage of about 24 ft., but the usual annual extreme stage is 20 ft., and the permanent channel is 14 ft. The city on the n.w. spreads out in a plateau towards the Missouri river, but on the s.w. the topography is rolling, merging into high hills along the Merrimac river. Mill Creek valley, which divides the city into north and south St. Louis, was once a long pond known as "Chouteau's," now occupied by the Terminal system of railroads entering both the e. and w. This valley is spanned by seven bridges that carry street-car tracks and afford convenient communication between the two sections.

Climate.—Although St. Louis has the reputation of being a very warm city during summer, it is not more so than other places on the same isothermal line, but it shares with cities of like latitude the inclemency of soft winters, during which time the atmosphere is heavily charged with moisture that causes even a high winter temperature to feel very chilly. The mean temperature for summer for the past four years was 77.1° and for winter 33.3°. The average annual rainfall for the same time was 41.1 in.

Transportation.—Until the decline of river transportation, following the Civil War, St. Louis had the largest river commerce of any city in the United States. When railroads superseded the slower means of water transport, the city soon became the center of steel roads, east and west and north and south. At this time, 1907, 27

lines enter St. Louis at the Union Station, for passengers, and discharge freight into immense warehouses located in Mill Creek valley. In 1874 Eads bridge, that cost $6,500,000 was opened to railroad, street car, and wagon traffic. This great steel structure crosses the river from Washington avenue from the w. (the wholesale street of St. Louis), and connects with the Relay depot and business section of East St. Louis. In 1890 the Merchants bridge, that spans the river 3 m. above, was completed, used exclusively by railroads. Another bridge, a m. below Eads bridge, is planned for construction by the city, $3,500,000 bonds having been voted for the purpose. This bridge is owned and operated by the city and accommodates railroads, street cars, wagons, and foot passengers. The object that prompted the city's action, was to relieve the merchants from the burden imposed by the Eads Bridge and Tunnel Terminal charges, and to make St. Louis the through bill freight terminus from the east, which has heretofore been East St. Louis. Union Station (cost $11,500,000), the largest in the world, occupies four squares, more than 13 acres. It is what is known as a 'pocket depot,' all trains entering by backing in. Its width is occupied by 32 tracks, and a baggage station, with a midway, 130 ft. wide, extending crosswise from Eighteenth to Twentieth street. Under the trackage is a substation for the handling of freight, mail, and express.

Commerce and Manufactures.—As the fourth city in America, in population and industries, St. Louis commands marked attention not more because of its present wealth than for the prospect of its future greatness. Rapid development of the southwest contributes directly to the growth of St. Louis, which is the granary and supply center of the middle west. During 1906, 372 new factories, with a capital of $47,246,000, were established in the city, and in the same year 1,757 new mercantile concerns, with an operating capital of $16,000,000, opened business in St. Louis. The sales of manufactured products for the first six months of 1907 aggregated $600,000,000. This amazing growth is due largely to the development of the southwest territory, in which the future of the city lies, but closely seconding this advantage are immense coal fields almost at her doors, from which coal is delivered to manufacturers at $1.55 per ton. In addition to these are the transportation opportunities provided by the Mississippi, Missouri, and Illinois rivers, improvement of which and maintenance of a permanent depth of 14 ft. is now a demand forced upon the attention of Congress. By the census taken in 1905 there were in St. Louis 2,480 manufacturing establishments, with a capital of $255,387; clerks and wage-earners, 93,946; cost of materials used, $117,552,144; value of products, $267,004,310. The river traffic, 1906, was: tons received, 327,670; tons shipped, 89,158, which shows a substantial increase over 1904-05.

The receipts and shipments reported by the Merchants' Exchange for the year 1906, including rail and river, were 45,381,478, which show an increase of 11 per cent over 1905. Bank clearings for 1906 were $2,972,653,307, being 100 per cent increase since 1896. The combined resources of St. Louis bank and trust companies, in the Clearing House Association, 1906, amounted to $290,-371,678. This is exclusive of unassociated trust companies, with resources of $85,000,000.

In 1906, when national bank deposits showed a marked decrease in New York, Boston and Philadelphia, the increase in St. Louis banks was $7,177,000. The gain in resources since 1901 was $180,877,816.

Public Institutions and Improvements.—St. Louis has about 1,000 miles of streets, 600 of which are finely paved. Over these are operated 351 m., single track, of electric roads, which connect with several interurban lines and are causing a rapid building up of suburban districts. There are 18 public parks, covering an aggregate area of 2,125 acres; the largest, Forest Park, containing 1,375 acres, is exceeded in area by only one park (Fairmount, Philadelphia) in America. The finest driving streets are King's Highway, Lindell, and Grand avenues. The principal business streets are Washington avenue, Locust, Olive and Pine streets, east and west, and Broadway, Fourth and Sixth streets, north and south.

The City Hall, finished in 1904, cost $2,000,000; the New City Hospital cost $1,000,000. Shaw's Garden is one of the finest and best known botanical attractions in the world, a gift to the city, in connection with Tower Grove Park, by Henry Shaw. The Louisiana Purchase Exposition, which was held in St. Louis in 1904, left to the city the permanent portion of the Palace of Fine Arts, which has since been made a Museum of Fine Arts and now houses a large exhibit of paintings, statuary, objects d'art, and historical relics. The largest educational institution, just outside the city limits, is Washington University, that celebrated its 50th anniversary June 20, 1907. The St. Louis University (Catholic) on Grand avenue, likewise ranks with the great institutions of its kind in America. There are four high school buildings, which, in size and equipment, are exceeded by few public school structures in the United States.

The principal libraries are the Public School (200,000 vols.) and the Mercantile (130,000 vols.). The Central Library (Thirteenth, Fourteenth, Olive and Locust streets) received a gift of $1,000,000 from Andrew Carnegie, and the building cost, including ground, about $1,356,000. The city furnishes and maintains it. There are several theaters, none very fine, however; the best are the Century, Olympic, Garrick, with five of lesser importance. Others are building. There are four prominent musical organizations, but no exclusive concert

hall, but the New Coliseum, at Jefferson and Washington avenues, provides St. Louis with one of the largest halls in the country. Three miles below the city, on the Mississippi, are Jefferson Barracks, where the government maintains a garrison and headquarters for the army of Missouri.

Municipal Government and Real Estate.—By the charter adopted in 1876, St. Louis city has divorced from the county and has the distinction therefore of being in no county. The legislative branch of the municipal government consists of a council, 13 members elected at large, 28 members elected by wards, and a house of delegates, which, with a mayor, are elected for four years. The mayor appoints heads of departments. A board of police commissioners is appointed by the governor. The annual expenses of the city are $7,945,637.67 and the total receipts, $8,292,198.12 (1906). The bonded debt up to June 1, 1907, was $20,790,278.30, exclusive of $11,500,000 voted for municipal improvements. The assessed valuation, on the basis of two-thirds actual values, of St. Louis real estate is $512,546,070.

The rapid growth of St. Louis has caused a corresponding increase of values of real estate, especially of business property. No other large city shows so great a per cent gain in buildings, the past three years, as St. Louis, thus indicating that the Exposition may have imparted impetus to the progress begun with the advent of prosperity in 1900. While very decided activity and increase of values characterizes the real estate market in the commercial section, residence property continues to sell far below prices obtained for similar property in all other cities of the United States of 300,000 population and above. The total amount of transfers in 1906 was $70,663,880, against $79,496,331 for 1905. The water works are owned by the city and are operated at a considerable profit. The daily capacity is 150,000,000 gallons and the daily consumption is 75,000,000 gallons. Formerly, St. Louis was supplied with the turbid water of the mixed Missouri and Mississippi, but by the inauguration of a new system of large settling basins and a clarifying process, the city now obtains water as clear as any filtration plant is capable of furnishing.

Bibliography.—Hyde and Conrad, *Encyclopedia History of St. Louis* (1899); Scharf, *History of St. Louis* (1883); Cox, *Old and New St. Louis* (1894); Switzer, *History of Missouri* (1888).

ST. LOUIS: town, cap. of the French possessions in Senegambia; on the small low island of St. Louis, at the mouth of the Senegal river. The town covers almost the whole island. With its fortifications, it presents an imposing appearance from the sea. The harbor is good. The principal building is the government house. There are 600 stores for goods. Pop. 20,200.

SAINT LOUIS UNIVERSITY, The: located at Saint

Louis, Mo., and the oldest university in the Louisiana Purchase Territory, was founded by Jesuit missionaries from Maryland; the beginnings were made at Florissant, Mo., in 1823, when a school for the education of the Indians of the Missouri Territory was established at the request of President James Monroe and the Hon. John C. Calhoun, his secretary of war. This school was transferred to Saint Louis in 1829, and classes were opened there for white students in 1829. In 1832 the institution was chartered as a university by Act of the legislature of Mississippi. In 1842 a medical department was added and in 1843 a school of law. The schools of philosophy and divinity were organized in 1857. In 1888, owing to the encroachments of business, the university was moved to its present quarters and the various departments were erected on the new site with the exception of the school of medicine, which is situated 1 m. distant. The library contains 42,000 volumes, including the library for undergraduates; there are also departmental libraries in theology, philosophy, science, and medicine. The students number 1,010 and the faculty 133.

ST. LOU'IS, Lake: in Quebec, Canada, an expansion of the St. Lawrence river, 9 m. s.w. of Montreal; greatest length 20 m., width 7 m. It is the outlet of the Ottawa river, which enters it on the w. side through two channels.

ST. LUCIA, *sānt lô-sē'a:* one of the Windward islands, a division of the Caribbees; about 30 m. s. of Martinique; its s. extremity being in lat. 13° 41′ n., long. 61° w. St. Lucia has been a British possession since 1803. The island is of volcanic origin, and the crater of the *Soufriere,* or *Sulphur Mountain,* is still in energetic operation. St. Lucia is remarkable for picturesque and romantic scenery. Much of the surface is covered with hills, generally well wooded, and occasionally rising to nearly 3,000 ft. Area, 248 sq.m., or 158,720 acres, of which but a small portion are under crops. As the coast abounds in secure, commodious, and defensible harbors—more valuable from their comparative scarcity in that region—the island has been, perhaps to an unrivaled extent, an object of contention between France and England. The chief exports are sugar, rum, cocoa, logwood, coffee, and tobacco. Castries, the capital of the island, with its fine harbor, is one of the most important ports and the second British naval station in the West Indies; the entries and clearings annually amount to nearly 2,000,000 tons. Pop., mostly negroes, is 50,237.

SAINT LUKE, Guilds of: were associations of painters organized in mediæval times under the patronage of Saint Luke. The guilds flourished for many years in Holland and admitted as members engravers, printers, and other artists.

ST. MALO, *săng mâ-lo':* fortified seaport of France, dept. of Ille-et-Vilaine, at the mouth of the river Rance. It stands on a small island less than 3 m. in circumference, called *Le Rocher d'Aaron,* which is connected with the shore by a causeway, 650 ft. long, called *Le Sillon.* The island is completely covered by the town; the streets are narrow, filthy, and ill-ventilated, and the houses are built to the height of five or six stories. The harbor is spacious and secure, but its entrance is narrow and thickly set with rocks and shallows. It is perfectly dry at ebb-tide, but the flood-tide rises 45 to 50 ft. Numerous strong forts, both on the mainland and on the small islands that stud the roads, protect the harbor and town. The harbor works were completed under the second empire, and cost nearly 20 million francs. Ship-building is the principal industry. On the island of Grand-Bé, near the ramparts, is the tomb of Chateaubriand. Many vessels are employed in the mackerel, cod, and whale fisheries, and active commerce is carried on. St. Malo communicates with Rennes (cap. of the dept.) by railway. Pop. 12,600.

SAINT MARC GIRARDIN'. See GIRARDIN.

ST. MARTIN: one of the Lesser Antilles, West Indies, between Anguilla and St. Bartholomew; lat. 18° 5′ n., long. 63° 3′ w.; about 30 sq.m. The n. part belongs to the French, the s. to the Dutch. The surface is hilly and moderately fertile, the n. portion being more productive. The products are sugar, rum, molasses, tobacco, and salt, vast quantities of the last named being made from the extensive salt lagoons or marshes in the s. part. Pop. (1900) 3,174.

ST. MARY AND ALL SAINTS COLLEGE, LINCOLN, Oxford: commonly called LINCOLN COLLEGE (q.v.).

SAINT MARY HALL, in Oxford, England: institution of learning, established 1239 by Henry Kelpe, citizen of Oxford, by presentation of a tenement on the site of the present St. Mary Hall to the rector of St. Mary's Church, to be the parsonage house. Edward II. gave the church, with the parsonage, to Oriel College. The college converted the parsonage into a place of education, and it gradually grew into an independent hall. It possesses 4 scholarships of £60 per annum, and one exhibition.

SAINT MARY'S: the first settlement made in the state of Md. In 1634 Governor Calvert in his ship, the Ark, sailed up the Potomac to Saint Mary's river, and bought land of the Indians and established a settlement near the mouth of the Saint Mary's. A Jesuit mission was established; many of the settlers, however, were Protestants, and absolute liberty of conscience of worship prevailed. Though Saint Mary's was the capital of Maryland, and for a number of years the only town

in the colony, it was never more than a small settlement. In 1694, after Maryland became a royal colony, the capital was moved to Annapolis, and Saint Mary's fell into decay.

ST. MARY'S STRAIT, or RIVER: stream, consisting of several small lakes and their connections, which leads from Lake Superior to Lake Huron, a distance of about 60 m., and separates Michigan from Ontario, Canada. There are a number of islands in the channel. The falls at Sault Sainte Marie, 18 ft. high, are avoided by a ship canal which, constructed by the U. S. government, with its improvements, has cost more than $2,330,000.

ST. MAURICE, *săng mō-rēss'*, RIVER: river in Quebec, Canada, 363 m. long, rising 216 m. from Montreal, and emptying into the St. Lawrence at the city of Three Rivers, 9 m. from Lake St. Peter. It passes through a region with magnificent scenery, drains an area of 16,000 sq.m., has numerous small islands, and receives several tributaries of considerable size. Great quantities of lumber are cut along its banks. The channels near its mouth are crossed by two bridges, 600 ft. and 1,400 ft. long. The falls of Shawenegan, 22 m. from the mouth of the river, are 160 ft. high, and are famed for their grandeur.

SAINT MICHAEL (formerly REDOUBT SAINT MICHAEL): a settlement on Saint Michael's Island, Alaska, in the s. part of Norton Sound; lat. 63° 28′ n.; long. 162° 5′ w. The settlement, or trading post, was founded in 1833 by Tebenkoff. The island is low and volcanic and is covered with vegetation. Saint Michael is the port where ocean steamers transfer and receive freight which is carried up and down the Yukon. The river vessels pass through the Aphoon Channel, behind a bar, and enter the Yukon by its northern passage. Navigation opens in June and closes in September. Since the discovery of gold, Saint Michael has become most important. During the summer there is a population of between 3,000 and 4,000. Many of the permanent residents are Eskimos. Pop. (1910) 915.

ST. MICHAEL'S: island, largest and most important of the Azores, and except St. Mary's, the most eastern island in the group; area, 224 sq.m., or 143,000 acres.—The island is mountainous and rises in its highest summit 3,560 ft. Of the whole acreage, 40,000 acres are arable, and about 5,000 acres are divided between orange gardens and vineyards. Hot springs abound, and in the western extremity are the Caldeiras, or boiling fountains, whence the water ascends in columns 12 ft. and then disappears in vapor. The thermometer ranges from 48° to 84°. The annual value of exports—by far the larger portion of which consists of oranges, and goes to Great Britain—is about $425,000; and of imports, mainly from Great Britain, a little more. The chief town is Ponta Delegada; pop. 16,767. Pop. of island, about 125,000.

ST. MICHAEL'S MOUNT: conical and isolated rock in Mount's Bay, Cornwall, England; 3 m. e. of Penzance. It communicates with the shore by a causeway 400 yards long, which, however, is covered with water 8 hours out of the 12. The Mount is 195 ft. high, is about one mile in circumference, and is crowned by an old and picturesque castle—now a manorial residence—surmounted by a tower, on one angle of which is a projecting stone lantern, popularly called *St. Michael's Chair*. At the base of the Mount is a fishing village, of about 30 houses. This hill is to the geologist one of the most curious of localities, and, indeed, it is said to have 'excited more geological controversy than any mountain of the world.' At a very early period St. M. M. was the seat of a religious house, and the apparition of St. Michael is said to have been seen on one of its craggy heights. At the Conquest, the monastery of St. Michael was annexed to the abbey of St. Michael in Normandy. It long remained in possession of the monks, and afterward became the residence of several families in turn, until it was sold 1660 to its present proprietors, the *St. Aubyns*.

ST. MICHEL, *săng mē-shĕl'*, MONT: extraordinary rock in Cancale Bay, in n.w. France; 7 m. s.w. of Avranches. It is a solitary cone of granite, 2 m. in circumference at the base, and 400 ft. high. It rises sheer out of a level expanse of sand, and though its elevation is not great, its perfectly flat environment and its pointed crest render it a most striking feature in the landscape. It is crowned by a church and castle, under which are conventual buildings, with their lofty turrets and high walls, and lower down are the houses of the small town. The sands are covered with water at every tide, except at neap-tides. A good road along a causeway about a mile in length connects the island with the mainland. Till 1880 the rock was accessible only by crossing the sands at low water; there being a firm track across the sands at low tide, with quicksands to right and left. In the 8th c. an abbey which replaced an ancient temple of Jupiter was founded on the summit of the rock. A church, and an almost impregnable fortress, were afterward founded by the Normans. After the Revolution the main building was changed into a prison. The castle has recently undergone restoration.

ST. NAZAIRE, *săng nâ-zär'*: thriving seaport of France, dept. of Loire-Inférieure, at the mouth of the Loire, on the n. bank of that river, and 38 m. w. of Nantes, with which it is connected by railway. Almost unknown till recent years, it is now one of the most important ports on the w. coast of France. Here the govt. constructed a floating dock of 25 acres area; and another of 50 acres is in progress. St. N. is the port for transatlantic steamers to the W. Indies and Mexico. One cause of the rapid rise of this port is, that the navigation of the Loire is becoming yearly more difficult because of sand brought down by the river; so that the chief shipowners of Nantes prefer to leave their vessels at St. N., and have the cargoes transported inland by railway. Pop. 35,800.

ST. NEOT'S, *sĕnt nē'ots:* small market town, county of Huntingdon, England; 8 m. s.s.w. of Huntingdon; on low ground on the banks of the Ouse. Its beautiful parish church has a tower 156 ft. high. St. N.'s has a large iron foundry, an engine factory, breweries, steam flour-mills, etc. About a mile from the town are large paper-mills. Pop. 4,000.

ST. NICHOLAS, *săng nē-ko-lá:* flourishing manufacturing and market town of Belgium, in East Flanders, 20 m. e.n.e. of Ghent, on the Ghent and Antwerp railway. It is in the midst of the Pays de Waes, a densely peopled and productive agricultural district, and is said to be the seat of the largest flax-market in the world. The market is held in the great square of the town, one of the largest in Belgium, but too small to accommodate the immense numbers who crowd thither on market-days. St. N. is a manufacturing town of the first class; and among the articles largely manufactured are cotton, woolen and silk stuffs, carpets, hats, lace, tobacco, and pipes. There are print-fields dye-works, and tanneries; and flourishing trade in shawls, linens, and other manufactured goods, as well as in flax, corn. Pop. (1901) 31,603.

ST. NICHOLAS, or SAINT NICHOLAS: see NICOLAS, SAINT.

ST. OMER, *săngt o-mār':* town of France, and fortress of great strength, in the dept. of Pas-de-Calais; on the Aa, 26 m. s.e. of Calais by railway. It is surrounded by irregular but well appointed fortifications, is well built amid marshes, and contains numerous fountains and some important ecclesiastical edifices. Woolen cloths, blankets, pottery, and clay pipes are manufactured, and there is considerable general trade. A college for education of English and Irish Rom. Catholics was opened at St. O. during the penal times. It was closed during the Revolution; still exists as a seminary. Pop. 20,700.

ST. PANCRAS, *sĕnt păn'kras:* one of the northern districts of London (q.v.).

ST. PAUL, *sānt pawl:* city, port of delivery, cap. of Ramsey co., and of the state of Minn.; on both sides of the Mississippi river; and on the Chicago Milwaukee and St. Paul, the Chicago and Northwestern, the Chicago Burlington and Northern, the Chicago Minneapolis St. Paul and Omaha, the Chicago St. Paul and Kansas City, the Great Northern, the Minneapolis and St. Louis, the Minneapolis St. Paul and Sault Ste. Marie, the Northern Pacific, the St. Paul and Duluth, and the Wisconsin Central railroads; 8 m. direct s.e. of Minneapolis, 409 m. n.w. of Chicago; 55½ sq. m. The site comprises three distinct terraces, rising from the river bottom to a beautiful plateau on which the business portion is built, and thence to a

VIEW OF ST. PAUL LOOKING TOWARD NEW CAPITOL.

backing of hills and bluffs, called the amphitheatre, which contains the choicest residences. The river is here crossed by a free bridge which connects the main part of the city with the former suburb of W. St. Paul. The trend of the surface renders drainage easy and thorough. The supply of water is from two lakes a few m. back of the city. S. is laid out with much attractiveness, has broad well-kept streets and sidewalks, is lighted with gas and electricity, has several lines of street railroad connecting the recently annexed suburbs, and has efficient fire and police protection. The new state capital of Minnesota, a magnificent structure of white Georgia marble, stands on high ground to the north of the business section; erected at a cost of $4,500,000, and comparing favorably in elegance and solidity with any public building on the continent. The contour of its lofty dome is especially admired. The new United States building, an expensive structure of pinkish-gray stone, with an imposing tower, shelters the post-office, the customs and internal revenue offices and the United States courts. The old United States building, of limestone, is still attractive in its gothic lines. The city hall and county court-house is another fine gothic structure of stone, surmounted by a tower in which is a musical chime of bells, and surrounded by green lawns. It cost, exclusive of the donated site, $1,000,000. Near the court-house is a handsome modern stone jail. The towering office-buildings of the Pioneer Press Company, the New York Life and the Germania Insurance Companies, the Endicott Arcade, the Manhattan building and the building of the German-American bank afford unsurpassed office accommodations. The old State Capital building of brick, with four wings surrounding a high square central tower, is an interesting landmark. The city and county hospital, near the river, is a model institution in architecture, equipment and management. Some of the department store buildings are of immense size. Among the church edifices, the People's Church, with an auditorium capable of seating about 2,500 persons; the Central Presbyterian, the Park Congregational, the First Baptist and the old Cathedral are the most noticeable. The public schools are housed in 47 buildings, most of them of an advanced type. There are 4 high schools. There are also about 60 private and parochial schools, with an estimated attendance of 15,000; also 11 denominational colleges. The city shares with Minneapolis the advantages of the University of the State of Minnesota; the Agricultural School of that institution being in St. Paul, and its other buildings near the line dividing the two cities. The Public, State, Historical Society, and other libraries have fine collections of books.

The total area of the parks is 1,082.4 acres. Como, Phalen and Indian Mounds parks are the most popular; the first two including beautiful lakes; the last affording what is said to be the most magnificent view on the Missis-

sippi river. Merging with its grounds are those of the State Fish Hatchery. Harriet island, in the river fronting the business part of the city, has also been made an attractive pleasure ground. On the north, surrounded by St. Paul territory on three sides, but legally not a part of the municipality, are the grounds and beautiful buildings of the Minnesota Agricultural Society, owned by the state. St. Paul is a port of entry and one of the few tea-inspection ports of the United States; a large portion of the teas imported from the Orient being here inspected. The total amount of dutiable goods passing through the custom-house already reaches $4,000,000 a year; of goods free of duty. There are 650 manufacturing plants, employing 25,000 persons, with an output for the last year of over $125,000,000. Chief among manufactured articles are office furniture, stoves and fittings, furs, hats, macaroni, linseed oil, etc.

For many years St. Paul was an Indian trading post. The first building was erected 1838; Jesuit missionaries established a chapel and mission and named the place 1841; lots were plotted and a village organized 1847; a town was incorporated 1849; and a city charter granted 1854. After the incorporation of Minneapolis, 1867, a strong rivalry sprang up between the two places, and each sought to increase its importance by annexing populous and thrifty suburbs. When the Northern Pacific railroad was completed its principal shops were located at St. Paul; and 1874 the city annexed West St. Paul, and 1884 the villages of Hamline, Merriam Park, Union Park, and Macalester, 1891, June, an attempt was made for consolidation of Minneapolis and St. Paul under the name Federal City. Pop. (1910) 214,744.

SAINT PAUL: a remarkable island in the Indian Ocean, half way between Africa and Australia, and about 50 m. s. of the island of New Amsterdam. These islands are the exact antithesis of one another, Saint Paul almost barren, and New Amsterdam covered with a dense vegetation. The island is 2 m. long, 860 feet high and of volcanic origin. Goats, cats, rats and mice flourish, insect life is abundant and sea-fowl in multitudes are characteristic. Fisheries are excellent. Saint Paul was ceded by England to France in 1892.

ST. PAUL DE LOANDA, *sānt pawl dĕh lō-ân'dâ:* seaport on the s.w. coast of Africa; principal Portuguese settlement in Lower Guinea; at the mouth of the river Bengo, lat. about 8° 54′ s. It is the largest and most important European settlement on this coast. The climate is comparatively healthful, the harbor is beautiful, and protected by one large and two small forts. The houses are good, the streets unpaved, and there are three churches and three market-places. Abundance of fruit and vegetables, bullocks, and goats are obtainable in the markets. Ivory and bees-wax are principal exports. Pop. 12,000; 800 to 900 white; 2,400 mixed, and about 9,000 black.

ST. PAUL'S CATHEDRAL.

ST. PAUL'S CATHEDRAL, in London: largest and most magnificent Protestant church in the world, and usually ranked second only to St. Peter's in Rome among religious structures of modern times. The site of the present building was occupied about 610 by a Christian church dedicated to St. Paul. This church continued till 1083, when it was destroyed by fire. From its ruins arose a much more splendid edifice—immediate precursor of the present cathedral. In 1137, the building suffered severely from fire; but, that being the great age for splendid churches, it was soon restored with great magnificence, the bishops and the people contributing most liberally to defray the cost. Old St. Paul's was the largest church in the country: 690 ft. in length, 130 in breadth, and about 150 high. The total height of the stone tower and the spire, covered with lead, which surmounted it, was 520 ft. The cloister was 90 ft. square, with a beautiful chapter-house in the centre. In 1666 the great fire of London completely destroyed the old cathedral, with a large portion of the city and most of the churches; and thereafter, Sir Christopher Wren was employed to design about 50 of the new churches, and, among others, the new cathedral. In 1673 he submitted several designs for a new cathedral, to the king, who selected one, and ordered a model of it on a large scale to be prepared. This was done by Wren, and the model still exists. Its plan is in the form of a Greek cross, having a large dome over the centre, supported on eight arches. This was, however, eventually departed from; and the new design was modelled on that of a Gothic cathedral, with an interior length of 460 ft., width 240 ft. across transepts, and a nave 94 ft. wide. The dome, and the eight supporting arches of the model, are preserved; but in the new design the angle arches lead to no spacious compartment, but to small dark passages only; while the upper portions of these great arches are blocked up with other arches, introduced for constructive purposes, but very destructive of the architectural effect. The plan of supporting the dome on eight arches had the charm of novelty, also of simplicity of construction, but it made the arches themselves too small in proportion to the great span of the dome. The constructive skill displayed by Wren in this building is universally acknowledged and admired, but it is thought that he has allowed the mechanical exigencies of the work to interfere too much with its decorative requirments. The dome, for instance, is constructed on a new and most masterly principle, the thrust of the vault being counterbalanced by the weight of a brick cone, which is carried up to support the stone lantern over the exterior dome. But, to carry this out with the least expenditure possible, the drum, or plain cylindrical wall under the dome, is sloped inward, so that the columns with which it is decorated appear to the spectator below to be falling inward, producing a painful and disagreeable effect. Great exception is taken to the fact that the external dome is of *wood*, and not of stone, and so liable to premature decay; but the same may be said of the wooden roofs over the vaults of

Gothic cathedrals; and by making it of wood, Sir Christopher was enabled to raise it to a height which makes it one of the noblest buildings of the kind in the world. The design of the nave, from the classic vaulting with which it is covered, is necessarily to a great extent a failure. When domes, or intersecting vaults, are used in a classic building, the compartments must be about square; there can therefore be but a small number of nave piers, as compared with those of a Gothic cathedral, and the perspective effect of the latter is thus entirely lacking. The same is the case at St. Peter's. St. Paul's dome is particularly successful, and is admitted to be the finest in existence; no other being so graceful and varied in outline yet so massive in general effect. Its height from the pavement to the top of the cross is 404 ft. The w. front, as seen from Ludgate Hill, is most striking; the two campaniles group most harmoniously with the dome, and, together with the portico, produce a pleasing and remarkable effect. This front must, however, be condemned, with the screen-walls, if strictly criticised. The upper portico *appears* to indicate an upper story, where there is none, and the actual construction and true form of the building are not expressed at all. St. Paul's is the burial place of many heroes and men of distinction, whose tombs are in the crypt, and whose monuments adorn the interior of the cathedral. Among these are Nelson and Wellington, Collingwood, Abercromby, Moore, Howe, St. Vincent, Picton, Rodney, and many other celebrated soldiers and sailors; Howard, Johnson, Reynolds, Barry, Opie, West, Astley Cooper, Sir William Jones, Sir Christopher Wren, and other distinguished civilians. Several of the monuments are by Flaxman, Chantrey, Bacon, and Rossi; but it must be confessed that they savor generally too much of heathen mythology, to be appropriate in a Christian cathedral.

ST. PETER: city, cap. of Nicollet co., Minn.; on the Minnesota river, and on the Chicago and Northwestern and the Chicago St. Paul Minneapolis and Omaha railroads; 11 m. n. of Mankato, 75 m. s.w. of St. Paul. It contains the state hospital for the insane (cost $500,000); Gustavus Adolphus College (Luth.), 17 instructors, and 245 students; county court-house; 8 churches; several flour-mills; foundry and machine shops; furniture factory; 1 national bank (cap. $50,000); 1 state bank; and 3 weekly periodicals. Pop. 4,500.

ST. PETERSBURG, *sānt pē'tėrz-bėrg:* maritime govt. of Russia; one of the Baltic Provinces, between Lake Ladoga on the n.e and Lake Peipus on the s.w.; 20,750 sq. m. The soil is damp and thin; and woods and marshes cover two-thirds of the level surface. In the vicinity of the capital, much ground is in market gardens. The usual crops are grown, but the product of grain is much less than the consumption. The chief town is the cap., *Saint Petersburg* (q.v.). Pop. 2,107,691.

ST. PETERSBURG: city, cap. of the Russian empire, and of the govt. of St. P.; built upon, and around the lower branches of, the Neva, and on the shores of the e. extremity of the Gulf of Finland. 16 m. e. of Cronstadt, its port; lat. 59° 56′ n., long. 30° 19′ e. The Great Neva, the most southern branch of the Neva, divides the city into toc great sections—the Petersburg Side on the n., and the Great Side on the s. The former is on the islands formed by the delta of the Neva, chief of which are the Vassili Ostrov, the Citadel Island, and the islands Aptekarskoi, Kammennoi, Petrovskoi, Krestovskoi, and Elaghinskoi The Great Side, s. of the Great Neva, is compactly built, and contains the residences of the court and of the nobility and more than half the population. The city covers 42 sq. m., and is 56 ft. above sea-level on plains formerly malarious marshes, now drained and laid out in gardens.

The climate, severe in winter, is pleasant and mild in summer; mean temperature in summer 62°; winter, 14° F. The extremes of temperature are 99° and −51°. Fourteen arms of the Neva, irrespective of smaller branches, ramify through St. P., and there are seven canals.

General View of St. Petersburg.—Approaching the city from Cronstadt (q.v.), the port and fortress of the Russian cap., the first indications of the great city are the gilded dome of the Church of St. Izak, and the lofty spire of the Admiralty, rising apparently from the water's edge. The Admiralty Square faces the English Quay on the s. bank of the Great Neva, and may be considered the centre of the city. From the spire, with its numerous galleries, the whole plan of the city can be clearly seen. Right opposite it is the populous Vassili Ostrov, on whose shore are the Bourse, Acad. of Sciences, Corps of Cadets, etc. To the n. is the Citadel Island, and further n. the densely-peopled Aptekarskoi Island, and the Kammennoi, and other islands, mostly studded with wood-embosomed villas, and laid out in charming gardens. Considering the river on the n. as the chord, and the Admirality as the centre, the semicircle that might be drawn with a radius of 2½ m. would nearly describe what is called the Great Side of St. P. This section of the city is divided into three or four portions by the Moika, St. Catharina, Fontanka, and New canals; and it is intersected by three spacious streets, which radiate e.s e., s e., and s. from the great centre, the Admirality. The streets are named respectively the Nevski Prospekt (Neva Perspective), Gorokhovaia Oulitza (Peas Stre t), Vosnosenskoi Prospekt (Resurrection Perspective). Extensive suburbs are rising also on the e. bank of the Neva. There are five railway stations.

Streets, Squares, Monuments, Bridges, Churches, etc.—the street architecture of St. P., unlike that of Moscow, with its pale-yellow walls and red and green roofs, is almost destitute of color. Here the rigid, military aspect of the streets, with the houses drawn up in long regular lines of gray, or massed in blocks like the squares of battalions, is one of the first features of the Russian capital that impress a traveller. Except in the more fashionable quarters,

the greater number of the houses are of wood. St. P. contains 500 streets, and among these, lanes and alleys are unknown, as, while the finest streets have a breadth of 120 ft., the narrowest are 42 ft. broad. The Nevski Prospekt is the most splendid street; and for architectural grandeur, as well as for proportions, and for variety, is considered the finest street in Europe. It is 130 ft. broad, and about 4 m. long, planted on both sides with trees, contains a large number of most beautiful palaces, of highly ornamented churches, and splended warehouses, and increases in breadth and magnificence as it advances from the Admiralty. For the first mile it does not contain more than about 50 mansions, but each colossal. The houses are of brick, faced with stucco, are three and four stories high; and many are furnished with ornamental porches, colonnades, gilded balconies, and parapets that gird the flat roofs. About ten other streets are distinguished for grandeur, though none equals the Nevski Prospekt. There are 64 squares in the city; of these the Admiralty Square is one of the most famous. It contains one mass of buildings, presenting to the Neva a fine façade, nearly half a m. in length, while its sides are 650 ft. long. In the Palace Square, adjoining the Admiralty, stands Alexander's Column, an immense monolith, erected 1834. It consists of a shaft of red granite, on a pedestal of the same, and supporting a capital, above which rises the figure of an angel and a cross. The length of the shaft is 80 ft., and of the whole column 150 ft. Peter's Square contains the noble and well-known equestrian statue of Peter the Great, 18 ft. high, erected 1768–82. The Field of Mars, large enough for 40,000 men to perform military evolutions, contains the bronze statue of Suwaroff, and a monument to Catharine II.—*Bridges.*—Bridges numbering 150 unite the islands, cross the canals, and span the Neva. The Annitchkoff bridge, across the Fontanka canal, consists of five arches, is 110 ft long, and decorated with four spirited groups, in bronze, of wild horses and their tamers, by a native artist. The Nikolayevski Bridge, magnificent structure in granite, only permanent bridge except one that crosses the Neva—the others being temporary bridges supported on boats, and removed every autumn and spring—was completed 1850. It crosses the Neva from the English quay on the s. bank to the Vassili Ostrov shore, is 1,200 ft. long, and consists of 7 elegant arches, on ponderous piers of granite. At the n. end of the bridge, a drawbridge affords passage to ships. No part of St. P. affords a foundation solid enough to support weighty structures. The foundation for the Nikolayevski Bridge was not obtained until three sets of piles had been driven into the oozy bed of the river, one set on top of another, and so close, that all the timbers touched each other all the way across.—*Palaces, etc.*—St. P. might be called a city of palaces, from their number. The Winter Palace, destroyed by fire 1837, but soon rebuilt, is certainly the largest, and, in one sense, most probably the most magnificent palace in the world. It is 450 ft. long and 340 wide, has an imposing

façade, and contains 800 residents, and, during the residence of the emperor within it, is inhabited by 6,000 people. It has numerous ample halls, decorated in the most artistic manner, and containing collections, furniture, and articles of *virtu* of immense value. The Hermitage, on the Neva as is the Winter Palace, is connected with it by several galleries. Its gallery of 2.000 paintings is famous for its specimens of the Spanish school. The library of this palace contains the collections of Diderot, Voltaire, etc., and has in all 120,000 vols. The Annitchkoff Palace is the residence of the czarowitch. The Imperial Library, one of the first in Europe, contains 1,100,000 vols. and 35,000 MSS. The gilded tower of the Admiralty buildings, said to be visible from Cronstadt, and certainly in these flat lands a conspicuous landmark, is 230 ft. high. The Old and New Arsenals are surrounded by cannon captured from the Turks and Persians.—*Churches.*—St. P. contains about 350 churches, 300 of which are orthodox. Within the Citidal stands the Church of St. Peter and St. Paul, finished 1727. It is surmounted by a slender tower, crowned by a gilded spire, the whole being 345 ft. high. The cathedral of St. Izak, though destitute of architectural beauty, is remarkable for rude magnificence, and is one of the most considerable buildings of modern times; it is 330 ft. long, 290 ft. broad, 310 ft high; surmounted by a great gilded dome, and by four smaller domes. The domes are of bronze, and the value of the plate gold by which they are overlaid is stated at $250,000. Each of its four sides is adorned with a peristyle of 12 or 16 red granite monolith pillars from Finland. Other notable churches, are the Cathedral of Our Lady of Kazan, and the Vladimir Church.

Academies, Scientific Institutions, etc.—The Imperial public library contained 1886 more than 1,000,000 volumes and 40,000 manuscripts. The Acad. of Sciences, with library of 500,000 books and 13,000 MSS., was founded by Peter the Great 1725. In the Institute of Technology (founded 1829) 200 pupils are taught silk-spinning, manufacture of cloth, silk, and woolen stuffs, wood-carving, and engraving on copper. The Univ., founded 1829, is attended by 1,400 students and has between 80 and 100 professors and 150,000 volumes in its library. The New National Museum of Antiquities, Painting, and Sculpture, completed 1851, is a noble structure, entirely of marble and metal. There are numerous benevolent institutions, a number of splended theatres; and an Italian opera, a magnificent structure.

Manufactures and Commerce.—About 3,000 ships annually leave the port. The imports at St. P. annually are about $41,875,621, and at Cronstadt, its seaport. $565,295—total $42,440,916; and exports, at St. P. $9,063,802, at Cronstadt $31,867,102—total $40,930,904. Of the manufacturing cities of Russia, St. P. is one of the most important. The principal private factories are mills for spinning and weaving cotton. The immense imperial establishments produce admirable specimens of Gobelin tapestry, mirrors, articles in bronze, playing-cards, crystal, and porcelain.

ST. PETER'S CHURCH.

St. P. is a little less than two centuries old, but it takes rank among the first capitals in the world. It was founded by Peter the Great 1703, May 27. After a long struggle against the severe climate, insalubrious from exhalations of wide-extended marshes, and from the arctic rigor which even yet can cover the Neva with ice 4½ ft. thick, at length the town was founded and declared the capital 1712. Under the successor of Peter, the improvement, embellishment, and extension of the city went on. Catharine II. constructed the great canals which, while they afford ready communication, serve also to drain the marsh-lands, to render the atmosphere more healthful, and to mitigate the rigors of winter. The city suffered great damage and the loss of several hundred lives 1824 from an inundation of the Neva; and every April, when the ice breaks up, the lower regions of the city are threatened with a similar disaster. At St. P., all the ministers from foreign courts are bound to reside. The municipal receipts average yearly $2,808,380; expenditures $2,780,707. City affairs are in the hands of a municipality, elected by three kinds of electors, and practically a dept. of the chief of police, though under a separate gov.-ge . of almost unlimited authority. Pop. 1,439,375; the populous suburbs aggregate over 190,600.

ST. PETER'S CHURCH, at Rome: largest cathedral in Christendom. It stands on the site of a much older basilica, founded by Constantine 306, over the reputed grave of St. Peter, and near the spot where he is said to have suffered martyrdom. This basilica was of great size and magnificence; but had fallen into decay, when Pope Nicholas V. 1450, resolved to erect a new cathedral, worthy of the dignity of the Roman pontificate, then in the zenith of its power. A design was accordingly prepared by Rosselini on a very grand scale, and the tribune was begun, when the pope died. The new building remained neglected for about half a century, when Julius II. resolved to continue the work, and employed Bramanté, then celebrated as an architect, to make a new design. The design still exists. The foundation stone was laid 1506; and the works carried on with great activity till the death of the pope 1513. Bramanté, who died the following year, was succeeded by Baldussare Peruzzi. Almost every architect who was employed during the long course of time required for the erection of this great edifice, proposed a new design. That of San Gallo, who succeeded Peruzzi, is one of the best, and is still preserved. It was not till his death 1546, when the superintendence devolved on Michael Angelo, then 72 years of age, that much progress was made. He designed the dome; and had the satisfaction, before his death in his 90th year (1564), of seeing the most arduous part of the task completed; and he left such complete models of the remainder that it was carried out exactly in conformity with his design by his successors, Vignola and Giacomo della Porta, and successfully terminated by the latter in 1590 in the pontificate of Sixtus V. The design of Michael Angelo was in the form of a Greek cross, but the building was ac-

tually completed as originally designed by Bramante as a Latin cross, under Paul V., by the architect Carlo Maderno. The portico and façade were also by him. He is much blamed for altering Michael Angelo's plan, because the result is that the projecting nave prevents the dome (the *great* part of the work) from being well seen. The façade is considered paltry, and too much cut up into small pieces. It is observable that this entrance facade is at the *east* end of the church, not the west, as it would certainly have been north of the Alps. But in Italy the principle of orientation was little regarded.

Maderno's nave was finished 1612, and the façade 1614, and the church dedicated by Urban VIII. 1626. In the front of the portico is a magnificent atrium in the form of a piazza, inclosed on two sides by grand semicircular colonnades. This was erected under Alexander VII. by the architect Bernini.

The façade of the cathedral is 368 ft. long and 145 ft. high. As already mentioned, the design is not generally approved, but some allowance must be made for the necessities of the case. The balconies in the front were required; as the pope, at Easter, always bestows his blessing on the people from them. Five open arches lead into a magnificent vestibule, 439 ft. long, 47 ft. wide, 65 ft. high, and adorned with statues and mosaics. Here is preserved from the old basilica, a celebrated mosaic of St. Peter walking on the sea, called the Navicella, designed by Giotto, 1298. The central bronze doors also are relics saved from the old church. On entering the interior of the cathedral, its enormous size does not produce the impression which its grandeur of proportions should give the spectator: this arises from the details all being of excessive size. The pilasters of the nave, the niches, statues, moldings, etc., are all such as they might have been in a much smaller church, magnified. There is nothing to mark the scale, and give expression to the magnitude of the building. The figures supporting the holy water fountain, e.g., appear to be those of cherubs of a natural size, but when more closely approached, are found to be six ft. in height; and the figures in the niches are on a still more colossal scale. The cathedral is 613 ft. long, and 450 ft. across the transepts. The arch of the nave is 90 ft. wide, and 152 ft. high. The diameter of the dome is 195½ ft. From the pavement to the base of the lantern is 405 ft., and to the top of the cross 434¾ ft. The dome is thus 50 ft. wider, and 64 ft. higher than that of St. Paul's (q.v.), in London.

The walls of the interior are adorned with plates of richest marbles, and copies of the most celebrated paintings executed in mosaic. The arch piers have two stories of niches with statues of saints; but these, unfortunately, are in a debased style of art. The pavement is all in marbles of different colors arranged in beautiful patterns designed by Giacomo della Porta. The dome is the finest part of the cathedral: it is supported on four great arches. Immediately under the dome stands the high altar over the grave of St. Peter. It is surmounted by a magnificent baldacchino or canopy,

in bronze, designed by Bernini 1633, and executed with bronze stripped from the Pantheon by Pope Urban VIII. Beneath the high altar is the shrine, in which 112 lamps burn day and night. The building is adorned with many remarkable monuments and statues, some of them by Michael Angelo, Canova, and Thorwaldsen. The most of the monuments are erected in memory of the popes, but there is one to 'James III., Charles III., and Henry IX., kings of England,' the remains of the exiled Stuarts being buried in the vaults beneath. The 'Grotte Vaticane,' or crypt, has been most carefully and religiously preserved during all the changes and works of the cathedral; so much so, that the ancient pavement remains undisturbed.

As a work of architectural art, St. Peter's is the greatest opportunity which has occurred in modern times; but, notwithstanding the great names of the men who were engaged upon the work, it is universally admitted to be a grand and lamentable failure.

ST. PETER'S COLLEGE, in Cambridge, England; commonly called PETER-HOUSE: founded before any other college now existing in England—viz., 1257, by Hugh de Balsham, Bp. of Ely, and endowed by him 1282, with a maintenance for a master and 14 fellows. In addition to the 14 original foundation-fellows, there are two bye-fellows on different foundations, and 23 scholars. The master is elected by the society.

ST. PETER'S LE PORT, *lĕh pōr;* commonly ST. PETER'S: chief town of Guernsey, one of the Channel Islands: see GUERNSEY.

ST. PHILIP, FORT: see JACKSON, FORT.

ST. PIERRE, *săng pē-ār':* town of the island of Bourbon (q.v.), or Réunion, on the s.w. coast, 34 m. s.w. from Saint Denis. Pop. 27,900.

ST. PIERRE': former chief town of the island of Martinique (q.v.), belonging to France; at the head of a bay, 16 m. n.w. of the cap., Fort de France. It was the largest town in the Antilles, with a pop. of 26,000, but was effaced by a volcanic eruption in 1902.

SAINT PIERRE', JACQUES HENRI BERNARDIN DE: French writer: 1737, Jan. 19—1814, Jan. 21; b. Havre. He received his education at Caen and Rouen, and entered the govt. dept. of civil engineers. On his dismissal 1761, he wandered about the continent several years, endeavoring to realize his dream of a republican colony. He returned to France 1766, and soon obtained a commission as engineer for the Mauritius; but after three years in the island, he returned to Paris. At this time he wrote the story *Paul et Virginie.* The little book, with its passion, its simplicity, its tenderness, though open to criticism as too exuberant in sensibility and too gaudy in style, achieved immense success, and has been translated into many languages. St. P. passed through the storms of the Revolution in safety, and secured the patronage of Napoleon. Besides *Paul et Virginie,* he wrote other tales, essays, and several plays.

ST. PIERRE, *săng pē-ār'*, AND MIQUELON, *mē-kĕh-lōng':* French colony on the isles of Little and Great Miquelon and Saint Pierre, s. of Newfoundland, opposite the mouth of the Gulf of St. Lawrence; area about 81 sq. m. The ports are frequented by vessels engaged in cod fishing. The cap. is St. Pierre. Pop. of colony about 4,800.

ST.-PIERRE-LES-CALAIS, *săng-pē-ār'lā-kâ-lā':* town of France, dept. of Pas-de-Calais. It may almost be regarded as a s.e. surburb of Calais, which it nearly adjoins; but has grown to a size exceeding Calais itself. It is noted for its manufactures of Tulle (q.v.). Other branches of industry are actively prosecuted, e.g., manufactures of leather and of beet-root sugar. Pop. 30,800.

ST. PÖLTEN, *sānt pœl'tĕn:* fortified town of Lower Austria, 61 m. w. of Vienna, by rail. It is the seat of a cathedral, and has manufactures of cotton, paper, glass, and stoneware goods. Pop. 10,000.

ST. QUENTIN': see QUENTIN, ST.

ST. REGIS, *sānt rē'jĭs:* village on the s. bank of the St. Lawrence, partly in Huntingdon co., Quebec, Can., and partly in Franklin co., N. Y. It was settled 1760 by the St. Regis tribe of Iroquois Indians, and is inhabited solely by their descendants. The British tribe, occupying the Canada side, number between 700 and 800; the American, between 600 and 700. They all speak the Mohawk language, and are mostly Rom. Cath. in religion.

SAINTS: name in the New Test. for all members of the Christian community, however humble or weak; but restricted by ecclesiastical usage from very early times to those who, whether under the old or under the new dispensation, have been distinguished for personal virtues and for eminent services to the church. Of the old dispensation, the 'patriarchs and prophets' are commonly designated as saints: but the word is used much more of the Christian Church. In the ages of persecution, the quality which most of all challenged the admiration and reverence of the faithful was naturally courage and constancy in the confession of Christ and the defense of the Christian faith; thus the earliest of those whom the church reverences for sanctity of life, are mostly reverenced also as champions of the faith. In general, however, the S. are distributed into several classes, chiefly in relation to the special services which the church has appropriated to their honor: (1.) Apostles and Evangelists; (2.) Martyrs; (3.) Confessors, name applied primitively to those who had shown great constancy in their confession of Christ, though without the final crown of martyrdom; but in later times applied to all who, without being martyrs, were eminent for sanctity of life; (4.) Doctors or men eminent for sacred learning; (5.) Virgins; (6.) Matrons and Widows, distinguished for holiness of life. Anciently the character and appellation of saint was bestowed on individuals, as it were, by acclamation, and by the common consent of the members of the particular Christian community to which the individual belonged, or to which his merits were most familiar. The earliest

instances (see the letter of the Church of Smyrna on the martyrdom of Polycarp) of such judgments as to individuals were in the case of the martyrs. Altars were erected at their tombs, and the people assembled for worship on the anniversary of their martyrdom. The honors of the martyrs, even before the age of persecution had passed, were extended to confessors of the faith, and eventually to all eminent for holiness, especially to those who obtained the reputation of performing miracles. The names of those who were so honored were placed in the register (or diptych) of each church. It was not, however, till a comparatively late period that a regular form of procedure was established in the Roman Church for testing the claim of individuals to the authentic reputation of sanctity. From the 4th c. onward, examples of reference to Rome—e.g., in the Acts of Virgilius, Bishop of Trent—are cited by Roman Catholic writers. But the first recorded example of a solemn and public decree is in the case of Udulric or Ulric, Bishop of Augsburg, to whom the honors of sanctity were adjudged 993 by Pope John XVI. Since that time the procedure of the Church of Rome as to the public recognition of the saints has been matured and methodized. It consists of two stages, 'Beatification' and 'Canonization.' For the details of both, see a special work by the learned Pope Benedict XIV. (Lambruschini). The inquiry in both procedures, usually protracted and aiming at rigorous scrutiny (see ADVOCATUS DIABOLI), is conducted by the congregation of cardinals, called the Congregation of Rites; in the afternoon the pope goes solemnly to pay reverence to the image of the new saint. The effect of the final canonization is—to declare (1) that the canonized person is to be recognized as a saint throughout the entire church; (2) that he is to be invoked in the public prayers; (3) that churches and altars may be erected in his honor; (4) that he may be invoked in the mass and public service; (5) that a festival may be celebrated in honor of him; (6) that his image may be set up in public; and lastly, that his relics may be preserved and publicly honored. The solemnity of canonization, which is preceded by a new inquiry similar to that of the beatification, and a new judgment of the congregation of rites confirmed by the pope, is one of the most gorgeous in the entire ceremonial of the Roman Church. It takes place in the Vatican Church (St. Peter's), and is generally attended by a large assembly of bishops from various parts of the church. The Church of St. Peter's is specially decorated at a vast cost for the ceremonial, and the entire expenditure on such occasions has been estimated at not less than $100,000.

SAINT-SAENS, CHARLES CAMILLE: French musician: b. Paris, France, 1835, Oct. 9. He received his musical education in the Conservatory of the metropolis and in 1853 was appointed organist of the church of Saint Méry,

and in 1858 of the Madeleine, where he continued till 1877. His first comic opera, *La Princesse Jaune,* was produced in 1872, and *La Timbre d'Argent* in 1877. *Samson et Dalila,* a sacred drama, was produced at Weimar also in 1877, and was subsequently successfully revived at Rouen. His grand operas *Etienne Marcel; Henry VIIIme* (1883); *Proserpine* (1887); *Ascanio* (1890); *Phryne* (1893), have not maintained their early popularity. He is also known as a musical critic and has published *Rimes familières* (1886); *Problèmes et Mystères* (1894). He was elected member of the Academy in 1881.

SAINT SEBAST'IAN. See SAN SEBASTIAN.

ST. SERVAN, *săng sĕrvâng':* seaport of France, dept. of Ille-et-Vilaine; at the mouth of the Rance, opposite St. Malo, to which there is communication by a rolling bridge. The harbor, called Port Solidor, is secure. St. Servan, called often a suburb of St. Malo, is a watering-place, and carries on ship-building, and considerable commerce, especially in timber. Pop. 12,600.

SAINT-SIMON, *sānt sī'mon,* F. *săng sē-mōng',* CLAUDE HENRI (Comte DE SAINT-SIMON): founder of French socialism: 1760, Oct. 17—1825, May 19; b. Paris; of a different branch of the same family as the Duc de Simon. Although destined to become the propagator of some of the most revolutionary and democratic ideas of modern times, he was reared in a hotbed of aristocratic prejudice. Nevertheless, from his earliest years, Saint-Simon showed hostility to the established system of things, mainly, however, it seems (according to the anecdotes in vogue) from a certain puerile vehemence and obstinacy of nature. He was cursed, moreover, with vanity. What are we to think of a lad scarcely 16 giving his servant orders to rouse him every morning with such a summons as *Levez-vous, Monsieur le Comte, vous avez de grandes choses à faire,* especially when he had *nothing* to do? Saint-Simon was well educated in philosophy, like most of the young nobles of his time, and had D'Alembert among others for his tutor. At 18 years of age he entered the army, served with the French forces in aid of the colonies, in America; and distinguished himself on the day when Lord Cornwallis surrendered at Yorktown. Captured by the British on his return home, he was taken to Jamaica, where he remained till the peace in 1783 restored him to liberty and France. But the monotony of garrison life did not suit his restless spirit; and 1785 he quitted the service, and traveled in Holland and Spain, busying himself with various industrial schemes, such as connecting Madrid with the sea by a canal, and introducing *diligences* into Andalusia—the latter of which proved successful. The great Revolution found in him—though of the old nobility—an enthusiastic disciple; and he voted in his patrimonial canton for the abolition of titles of nobility, but did not take any part in the political events

that followed. His energies were then given to enriching himself; though as his disciples have naïvely observed, it was necessary that he should acquire wealth, that he might devote himself to ideas. During the Revolution, while in temporary imprisonment in the Luxembourg, visions of a new social system, based on scientific principles, instead of on political conventionalities, first unfolded themselves before his ardent imagination. His ancestor Charlemagne appeared to him one night in a dream, and said: *Depuis que le monde existe aucune famille n'a joui de l'honneur de produire un héros et un philosophe de première ligne. Cet honneur était réservé à ma maison. Mon fils, tes succès comme philosophe égaleront ceux qu' j'ai obtenu comme militaire et comme politique.* S., though now 38 years of age, began to study 'science,' of which he had been ignorant. His plan was pleasant and ingenious: he took a house opposite the *École Polytechnique*, and invited to his table the professors of mathematics, of physics, and of astronomy, from whose lips—in the intervals of their feeding—he acquired the necessary information. Then he changed his lodgings, and fixed himself near the *École de Medicine;* where, pursuing the same method with the physiologists, he learned from them something of the structure of organized bodies. In 1801, he married, and threw open his *salons* to all the savants and artists of Paris; but his lavish hospitalities—rather prodigalities—soon dissipated the fortune that he had amassed during the Revolution. Meanwhile a notable social idea seized him. Hearing that the husband of Madame de Stael had just died, he resolved to marry the widow, whom he considered the only woman fit to associate with him in his great project for regeneration of society. To be sure there was a little impediment in the way—viz., his being already married; but in France there was no difficulty in getting a divorce; and S. was soon as good as a bachelor again. Betaking himself to Coppet, he unfolded his plan to the lady, and begged her concurrence, urging his suit (it is said) by the most impressive considerations: *Madame, vous êtes la femme la plus extraordinaire du monde; comme j'en suis l'homme le plus extraordinaire; à nous deux nous aurions, sans doute, un enfant plus extraordinaire encore.* Madame de Staël, however, declined to further thus his philanthropic projects; and the reformer—now beginning to be in straits—published at Geneva *Lettre d'un Habitant de Genève a ses Contemporains* (1803) in which he proposes (among other things) that there should be an annual subscription for the benefit of men of genius—mathematicians, physicians, chemists, physiologists, littérateurs, painters, and musicians—that spiritual power should be in the hands, not of the clergy, but of savants, and temporal power in the hands of the landed proprietors; while the privilege of choosing 'chiefs of humanity' should belong to everybody: finally, he asserts that religion is only a human invention. S.'s proposal was not even noticed, either by 'men of genius' or by others; and in a few months he was glad to accept the office of copyist

at the Mont-de-Piété. Even this humble means of making a livelihood he had to resign from ill-health; and he would probably have died of starvation had he not met an old revolutionary friend, Diard, who took him into his house and furnished him with means to publish one of his most important works, *Introduction aux Travaux Scientifiques du Dix-neuvième Siècle* (Par. 1807). The death of Diard 1810, again plunged S into misery. Soon, we find him writing to Lacépède, Cuvier, Degérando, Cambacérès, etc., in this style: '*Monsieur,' soyez mon Sauveur, je meurs de faim . . . . Depuis quinze jours, je mange du pain et je bois de l'eau; je travaille sans feu et j'ai vendu jusqu'à mes habits pour fournir aux frais des copies de mon travail.* There is nothing ludicrous here—it is the plain unaffected cry of utter want. In 1812 his wretchedness came to a crisis; he left Paris, betook himself to Peronne, where he fell dangerously ill, but recovered through the attentions of his family, who now settled a small pension on him; he then returned to Paris. After the Restoration, he began —in spite of his extravagant vanity—to reap the usual reward of enthusiasm and perseverance—a crop of disciples. Of these the most distinguished was Augustin Thierry, who assisted him in the redaction of his *Réorganisation de la Société Européenne*—a work intended to demonstrate the inutility of the Congress of Vienna, and the incapacity of all mere political congresses to establish durable peace. He proposes the institution of a European parliament, having the right to arbitrate in cases of difference among the nations; and adds that the first step toward the reorganization of Europe is the union of France and England. 1817–8, he published *L'Industrie, ou Discussions Politiques, Morales, et Philosophiques*, written partly by himself and partly by his disciples. The third vol. is the work of the celebrated Auguste (q.v.). By this and other literary enterprises S. had exhausted all his funds, and as he saw no prospect of getting any more, he resolved to commit suicide, and actually discharged a pistol at his own head 1823, Mar. 9, which, however, only deprived him of an eye. The last, and by far the most remarkable work of S., is *Nouveau Christianisme* (Par. 1825), which contains his final and matured convictions. According to him, Christianity has been diverted from its original design. Progressive by nature, and meant to be modified by the changing circumstances of times and countries, it has been stiffened into unalterable dogmas by ecclesiastical conclaves. The clergy, whose mission is to instruct, are ignorant of the thoughts and manners of modern times, and have exhibited a complete and deplorable incapacity. Protestantism is no wiser than Romanism: it has set its face against the fine arts, and has shown a cruel and fatal indifference to the physical amelioration of the poor. But genuine Christianity embraces in its consideration all the needs of humanity. From its grand principle, 'Love one another,' it derives the proposition, that 'religion ought to direct all the social forces toward the moral and physical amelioration of the class

which is at once the most numerous and the most poor. From this premise is deduced the idea of a social hierarchy based on capacity and labor—the new spiritual church comprising all functions and professions, sanctifying science and industry, regulating vocations, fixing salaries, dividing heritages, and taking the best measures to make the labors of each conduce to the good of all. S. did not live to develop his principles in detail as far as they would have logically carried him; but in the writings of Comte we find the legitimate terminus and result of his sweeping speculations.—Much in the character and system of S. is unquestionably false, exaggerated, even laughable; but some of his criticisms are just, and some of his theories are at least suggestive; and the man who reckoned among his disciples names like Augustin Thierry, Auguste Comte, Olinde Rodrigues, Bailly (de Blois), Léon Halévy, Duvergier, Bazard, Enfantin, Cerclet, Buchet, Carnot, Michel Chevalier, Henri Fournel, Dugied, Barrault, Charles Duveyrier, Talabot, Pierre, Leroux, Jean Reynaud, Émile Péreire, Félicien David, Saint Cheron, Guéroult, Charton, Cazeaux, Dubochet, and Stéphane Mony—is not to be entirely disregarded, even though his system as a whole gives no signs of vital power.

SAINT-SIMON', Louis de Rouvray (or Rouvroy), Duc de: 1675, Jan. 16—1755, Mar. 2; b. Versailles; of a family claiming descent from Charlemagne. After a careful education, he entered the army 1693, but considering his promotion not equal to his deserts, he resigned, 1702, and for the remainder of his life was a sort of court statesman. S.'s position was as singular and as anomalous as his character. Profoundly ambitious, his pride was yet greater than his ambition. His ideas of aristocratic rights and privileges were perhaps more outrageously fanatical than any others on record in modern ages; and the whole aim of his life was to nullify the influence of the parliament, and to place the govt. of France in the hands of the *grands seigneurs*—the great territorial lords. The middle class he abhorred; and the rise to distinction of any one belonging to that order—any *novus homo*, tortured his patrician soul almost beyond endurance. His career of haughty conspiracy against the political rights of commoners, marks him as the most thoroughgoing of oligarchs. During the latter part of Louis XIV.'s reign, and the regency of the Duke of Orleans, he received much consideration, and his aristocratic policy more than once had a temporary triumph; but with the accession to the regency of the Duke of Bourbon he fell into disgrace, and withdrew from public life. S.'s last years were occupied chiefly in composing his famous *Mémoires*, a brilliant work of incalculable historical value. The *Œuvres* appeared 1791 (13 vols.); an ed. by Cheruel and Regnier (20 vols.) 1856 *et seq.*, and completely revised 1873–77. Baschet's monograph *Le Duc de Saint-Simon* (1874) revealed that much yet remained to be published; Boislisle undertook 1880 a fresh issue of the *Mémoires;* and 1881 Faugère gave us vol. I. of *Écrits inédits de S. Simon.*

OCT 21 1911

One copy del. to Cat. Div.

OCT 21 1911

LIBRARY OF CONGRESS
0 033 261 291 8